Quantum Gravity Non-simultaneous *EP* Irrotational Entropy Preservation Origin of Life

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Abstract: ***The second law of thermodynamics asserts that the entropy of an isolated system always increases. An isolated system exchanges neither matter nor energy with its surroundings, implying its constant total energy. This paradox implies that entropy acts as a parameter external to the system, yet one that dissipates the efficiency of internal energy. This external influence is defined Environmental Participation (EP).***

During the Bohr–Einstein debates—an era in which the nature of life and consciousness remained poorly understood—Bohr defended the Copenhagen instantaneous wave function collapse by invoking the then-common belief that consciousness could exert influence at unlimited "spooky" speeds. We believe this reasoning shares the same foundational logic as the second law's assumption but with a limited superfluid speed: both are originated from EP. As the basis of gravitational quantization under surface tension, EP non-zeroability-driven irrotationality has been shielded by the rigid geometric zerobility postulated by Newtonian Axiom.

Further revisiting historical oversights in the works of Newton, Einstein, Planck, and Schrödinger, also deriving from Landau's two-fluid model, plus Shannon entropy connotation and ancient Chinese Kungfu Loong acupoint irrotationality, we establish a biosystem entropy preservation paradigm. Our model reveals non-simultaneous inversion between surface quadrupoles and their spinal vector by EP irrotational selectivity, quantizing of gravity into SLE asymmetric spin: $n_k = n_{k+1} + |EP\rangle$. Finally, a six-year-old kindergarten boy demonstrates by foxtail grasses that life is steered by entropy rather than energy, reinforcing ice-cream-clip experiments by another six-year-old kindergarten girl.

Keywords: Energy Conservation/Entropy Preservation, Environmental Participation (***EP***), Bio Quantum Path (***BQP***), Newtonian Axiom, Inversion Energy, Non-simultaneous time, Quadrupole, pullback entanglement, Chaotic Entropy, Irrotational Entropy, superfluid level effect (***SLE***), Shannon-entropy loci, spinal vector, **Linearity Shifting**.

Introduction

To date, modern biology remains an empirical study based on the assumption of energy conservation. In 2019, a study disclosed that Cavendish mutation experiments yielded 10^9 levels of gravitational measuring difference between living and non-living organisms to suggest that life originated from a whirlpool. In 2020, these disposal sampling findings were extended to *in vivo* conditions including human subjects by ***FHD*** (falling height difference) method [1]. Despite sparking some curiosities, both studies remained confined to experimental studies.

By 2023, attempts to situate the previous two studies within a broader theoretical framework had faltered due to the insufficient understanding of the quadrupole [2] concept already outlined in the paper, as well as the shortage of enough technical details. Herein, we overcome this limitation by superposing the conventional paradigm of energy conservation with ether of **entropy preservation**. By unleashing the compressed microcosmic wave-particle duality for synentropy by environmental participation (***EP***), we redefine the gravitational surface mechanisms inversing quantum phenomena. This new framework not only deepens our understanding of **Superfluid Archimedean Buoyancy Principle** or **Superfluid Level Effect (*SLE*)** that sustaining bio-systems but also reveals overlooked insights that have persisted for a century, rectifying the notion that Schrödinger's wave function or quantum states are not solely maintained by conventionally described non-collapse conditions or certain probability story but rather must also be sustained by a surface degenerate ***EP*** irrotationality. The quantum gravity non-simultaneous superfluid quadruple asymmetric spin correlation follows $n_k = n_{k+1} + |EP\rangle$. Its origins can be traced back to ancient Chinese medical theory (over 2,000 years old) and later Wudang Kungfu practices (over 600 years old). These historical foundations, together with their modern thermodynamic Carnot cycle number quantizing conditions and Laudau' s superfluid two-fluid model extended asymmetric bio quantum spin survival mechanisms, are fully explained in the **Appendix II** file. From this point onward, physics and biology are no longer separate disciplines, the classical energy conservation paradigm born a new baby of entropy preservation. Any conflicts with previous versions [1][2] that only serve as the experimental probing reports should be resolved in favor of the content written down here in this paper.

Results

1. Origin of inversion energy (*EP* irrotational quantizing entropy matrix) from non-zeroability

The foundational axiom of Newtonian mechanics, derived from a system encompassing the Three Laws of Motion and the Law of Universal Gravitation, can be succinctly articulated as follows:

1) All physical parameters are measurable with precision by a zeroable reference.

2) Provided that no unmeasurable impacts alter the parameter values obtained through precise measurements, accurate test results and mathematical equations can indefinitely describe any phenomenon or process. Differential and integral

calculus are technically invertible and can achieve this modulation via zeroable rigidity (we should realize the limits here, in a Riemannian manifold, smoothness implies differentiability; in practice, this **smoothness** further requires that every homeomorphic Euclidean space be prerequisitely zeroable, thereby conforming to a rigid model in which no inversion energy is impacted the system, even though manifold appears flowable. The conventional derivative is established only under such a zeroable condition: $\boldsymbol{lim}_{\Delta x\to 0} = \frac{f(x+\Delta x)-f(x)}{\Delta x}$, if $\boldsymbol{x}$ and $\Delta\boldsymbol{x}$ belong to a different zeroable domain (or there exists a surface between) due to $\boldsymbol{EP}$ — then the process is no longer satisfy **Riemann smoothness** or the derivative becomes invalid for a physical world).

3) The Newtonian framework assumes that all physical precision-measured parameters within its domain are eternally 'zeroable,' meaning that, through appropriate choice of reference frame and adjustments, any given parameter can be set to zero or expressed in terms of other precision-measured parameters (eg. the Cartesian coordinate origin (0, 0) only exists theoretically; in reality, due to $\boldsymbol{EP}$, it only exists the non-zeroable origin $(\mathbf{0}+|\boldsymbol{x}'\rangle, \mathbf{0}+|\boldsymbol{y}'\rangle)$, here, the uncertainty components $(|\boldsymbol{x}'\rangle, |\boldsymbol{y}'\rangle)$ constitutes a concrete non-zeroable region. It is important to recognize that reducing $(\mathbf{0}+|\boldsymbol{x}'\rangle, \mathbf{0}+|\boldsymbol{y}'\rangle)$ to the idealized form $(\mathbf{0}, \mathbf{0})$ reflects only an **approximation consistent with classical geometry** rather than a **physically validated present, or the precision (obtain R**iemannian smoothness**) only exists mathematically but not physically).**

4) The Newtonian system and subsequent scientific paradigms adopt a methodology that isolates theoretical frameworks from the environment, implicitly assuming that all environmental conditions can be represented through precisely measurable parameters. (Note, the $\boldsymbol{EP}$ concept we propose here is not this sort; rather, it is characterized by internal linearity shifting confined within a surface tension region.)

This axiom has become a foundational cornerstone of modern science, influencing not only the natural sciences but also social and even culture. Notably, it was the French physicist Pierre-Simon Laplace who first clearly articulated this principle instead of Newton himself, which earned him the moniker "Laplace's Demon". Mathematically, Laplace's Demon can be symbolled as Δ:

$\nabla^2 = \sum_{i=1}^{n} \frac{\partial^2}{\partial x_i^2}$ (Note: in $-\frac{\hbar^2}{2\mu}\nabla^2\psi + U\psi = E\psi$, ∇^2 mixed with none Δ item in one equation to shield $\boldsymbol{EP}$**)**

The Bohr-Einstein debate revolved around this axiom, with Einstein defending it while Bohr championed Heisenberg's Uncertainty Principle. However, Bohr overlooked the fact that integrating Laplace's Demon into Schrödinger's equation still rested on the bedrock of energy conservation, a principle to which Einstein was steadfastly committed. To comply with this demon derived from the Newtonian axiom, quantum mechanics was obliged to postulate that the parameters of certainty and those of uncertainty can adhere to the same energy equation (means entropy impacts equally toward the energy level of certainty and uncertainty parameters) and quantum collapse can happen instantaneously into certainty without any resistance. This assumption confines quantum mechanics to the microscopic realm and hinders its extension into the domain of bio-systems.

Now, we can primarily delve into the essence of a quantum. Conventionally, a quantum (plural: quanta) is understood to be the smallest discrete unit of a given phenomenon. For example, a quantum of light is a photon, a quantum of electricity is an electron, and even certain semiconductor nanocrystals are termed quantum dots due to the quantum effects they exhibit. However, the rationale behind why it must be the "smallest discrete unit" instead of "any discrete unit of a system sustaining by $\boldsymbol{EP}$, esp. under a surface tension region" remains unexplored. Moreover, quantum mechanics continues to rely on outdated geometry, where any point on a curve or surface is deemed to have zero size, and any geometry curve between two points is precisely measurable. The feasibility of using such a geometrically infinitesimal point to represent a physical particle, which is a certain discrete unit with a certain scale, has never been questioned. From this perspective, the conventional paradigm of energy conservation is pre-justified by such geometry, theoretically assuming that:

1) One can measure a curve between two geometry points with precision: $ds^2 = g_{\mu v}\, dx^{\mu}\, d\, x^{v}$

2) The size of these two endpoints is zero: $g_{\mu v}\, d\, x^{\mu}$ and dx^{v} are theoretically zeroable (In Euclid geometry, an arc length can be calculated precisely without considering the endpoints. In Riemannian geometry, the endpoints begin to participate in the calculation of an arc length by $g_{\mu v}$; however, they are still geometrically zero size or without any internal structure. The zeroability of Newtonian Axiom relies largely on such classical geometry).

When one or both theoretical conditions cannot be met, this foundational paradigm begins to erode. From here, we can roughly call the arc length region an "energy conservation region" and the theoretically zero-sized endpoints but maybe impacted by $\boldsymbol{EP}$ as "energy non-conservation regions" or "entropy degeneration (or $\boldsymbol{EP}$ preservation) regions". In older geometric contexts, the intrinsic concepts of non-zeroability and uncertainty were considered interchangeable. Now, we can observe a macrocosmic experiment demonstrating the pervasive nature of non-zeroability. The bio-quantum pathway ($\boldsymbol{BQP}$) has been documented in previous studies[1][2] (Fig. 1a and S_Movie 1), where the discrepancy between Path A and Path B is non-zeroable or Path A and Path B exhibit different levels of "zerobility" that doesn't comply with the Newtonian Axiom's zeroability prerequisite conditions. Notably, conventional energy conservation is **inevitably** challenged, and this challenge occurs in a non-isolated environment, suggesting that non-isolated environmental conditions are closely linked to non-zeroable characteristics that undermine the Newtonian Axiom. Conventional conservation of momentum, a universal belief from Newton to Einstein also must rely on zeroable parameter(s), the Schrödinger wave function, albeit it has strolled into the non-zeroble range, was indeed postulated back to zeroable parameter(s) by the unitary modulation. We should recognize that energy and momentum hold different levels of significance for bio-systems. Energy, as a parameter, struggles to distinguish between the states of being alive or dead, whereas momentum provides a clearer distinction. The concept of "inversion energy" can be introduced to identify the portion of energy associated with momentum or EP uncertainty. Now, we can define inversion energy from the following six cases to finalize the unfinished job of quantum mechanics introduced by Lord Kelvin coined as the "first cloudiness": the relative motion of the ether with respect to massive objects.

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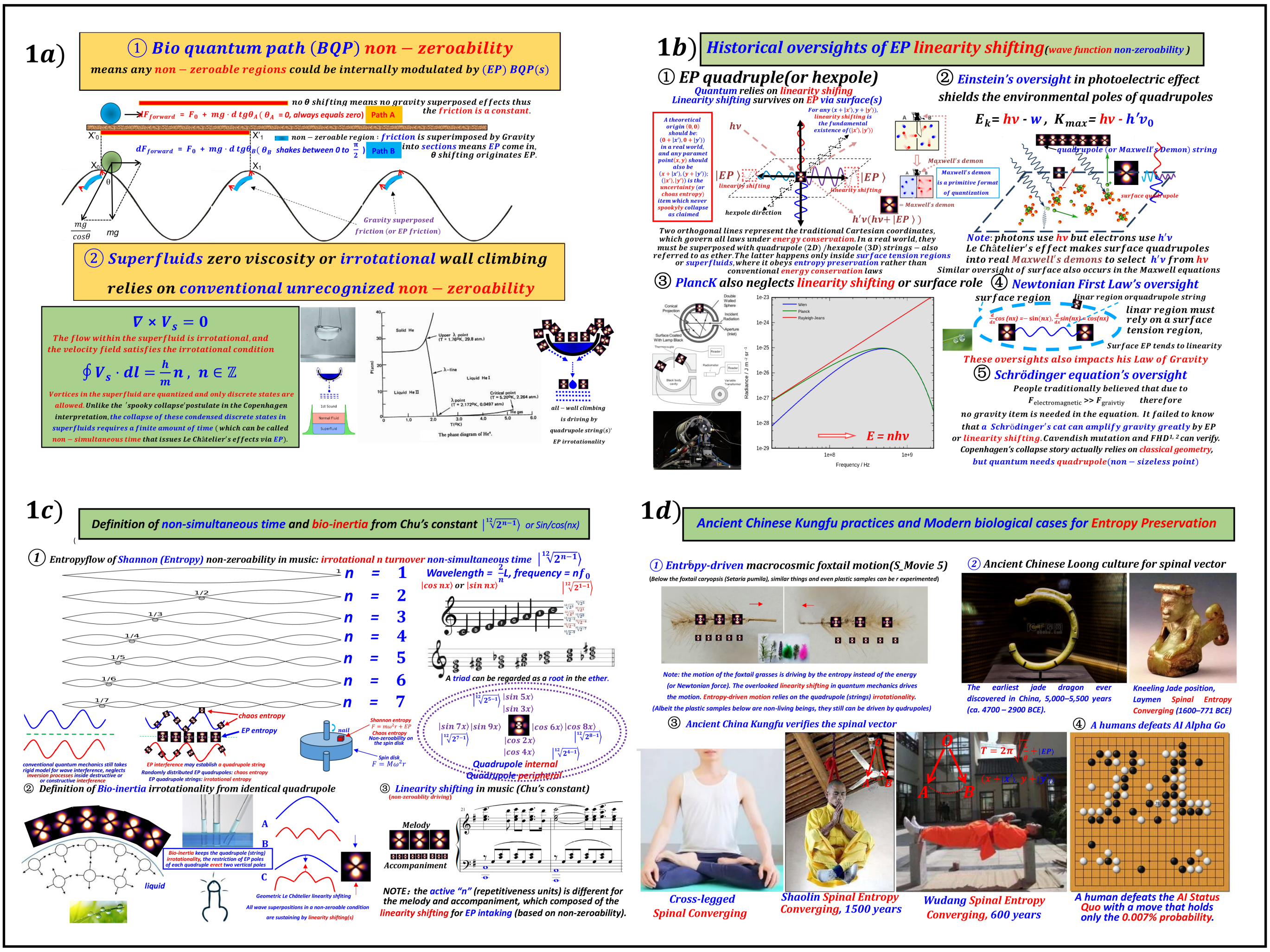

Figure 1: Definition of inversion energy (EP irrotational quantizing entropy matrix) from non-zeroability

(*Fig.1a*) *Bio Quantum Path(BQP) non-zerobility.* (*Fig.1b*) *Historicl oversights of* ***EP linearity shifting***.

(*Fig.1c*) *Definition of* ***non-simultaneous time*** *and bio-inertia from Chu's constant* (*Fig.1d*) *Ancient and Mordern Cases for* ***Entropy Preservation***

1st case: Generally, the condition for conventional conservation of momentum is in a closed system, no external forces act on the system, the total momentum of the system will remain constant, etc. However, in the macrocosmic BQP experiment, Path A and Path B issue different environmental gravity effects due to their different geometric shape. We can then define such a difference as environmental participation (EP). Due to the EP, momentum or energy is no longer conserved, just the energy non-conservation region still keeps the system from going beyond the momentum conservation too far away (we use the term "zeroable" to replace the microcosmic parameter "commuting" concept since quantum mechanics never believes a pair of "commuting" parameters can incorporate EP, but general macrocosmic non-zeroable parameters do so)

2nd case: **Macroscopic Superfluidity.** Superfluids[3] are quantum fluids (Fig. 1a② and S_Movie 2) that exhibit wall-climbing abilities[3], formed at extremely low temperatures. According to Landau's two-fluid model[3][4][5], they possess the characteristic of zero viscosity[6], meaning that the wall-climbing effect does not consume energy. Not only can bosons (He-4) form superfluids (λ: 4.2 K → 2.17 K), but fermions (He-3) can also form superfluids (λ: 2.5 mK → 3 mK). The wall-climbing effect of superfluids has been confirmed through both experimental and theoretical studies as an energy-free phenomenon under specific conditions. However, the entropy changes associated with this process remain largely unexplored. We propose that this process does not increase entropy and may, in fact, lead to entropy reduction. Consequently, we can reasonably conclude that the entropy-reducing characteristics of superfluids correspond to the non-energy-conserving (non-zeroable) regions observed in previous BQP experiments. Furthermore, we have strong reasons to believe that superfluid wall climbing is not solely driven by the system's internal free energy but also involves the absorption of external factors which can reasonably be called EP. While Landau has worked out the non-system-energy-consuming nature of irrotational superfluidity, he has yet to appreciate the significance of EP as a sustaining mechanism in this process.

3rd case: Zeroth law as the foundation of thermodynamics can be expressed as: $\begin{cases} Ta = Tb \\ Tb = Tc \end{cases} \rightarrow Ta = Tc$

Consider three He-4 superfluid systems (a, b, and c), all with the same temperature T and the same Landau point of 2.17 K, but with different ratios of zero-viscosity fluid. When these superfluids mix, they will continue to flow without consuming energy; in accordance with the Zeroth Law's temperature balance, meaning that entropy still generates. However, now the increase in entropy is more orderly and coordinated, not accompanied by the traditional stochastic energy losses associated with the generated entropy. On a macroscopic level, the flow of superfluids can be viewed as an efficient transfer of energy, avoiding the typical generated entropy found in regular fluids, which we can call entropyflow. On a microscopic level, the quantum properties of superfluids (such as zero viscosity and quantum coherence) enable certain internal pullbacks of the entropy increase. Such a state can be described as entropy regulation, or more specifically, a synentropy state. In this state, it could be said that the flow of the system is no longer driven by energy conservation, but rather by the preservation of entropy or entropyflow (the Zeroth Law implies that energy conservation is the sole condition that existed, allowing a temperature to represent equilibrium in both single and multiple systems, with thermal equilibrium corresponding to the highest entropy point. However, if the non-zeroable regions under energy conservation exhibit enough entropy properties, the temperature equilibrium point may not necessarily coincide with the highest entropy, as conventionally believed. Additionally, the time required for such an entropyflow existing system to reach the traditionally defined highest entropy point is referred to as "non-simultaneous time", which can represent lifespan in biosystems. Now, the duration that a non-equilibrium state can persist beyond the conventionally defined thermodynamic equilibrium, or the highest entropy state is sustained by the superfluidity of entropyflow that arises from $\boldsymbol{EP}$).

4th case: An experiment on animal sexual behavior and its gravitational $\boldsymbol{FHD}$ (falling height difference) effect, conducted with roosters and rabbits, demonstrates a loss of approximately 26.8–31.9% $\boldsymbol{FHD}$ s after sexual activity [1]. This phenomenon is best explained using the concepts introduced in the previous cases, particularly the entropy preservation properties of superfluids, synentropy, and entropyflow. These properties underpin bio-system self-healing and innate immunity. Biological organisms can be understood as room-temperature multiphase superfluids, where surface tension exhibits a climbing effect analogous to that of superfluids. Cerebrospinal fluid (CSF) functions as a biological multiphase zero-viscosity superfluid with the lowest entropy, playing a pivotal role in regulating the body's overall entropy. Aging corresponds to the gradual degradation of the CSF's zero-viscosity characteristics, while sexual reproduction represents a cross-generational synentropy transfer process. Unlike the traditional genetic model, which assumes that offspring inherit exactly half of their genetic material from each parent, this model suggests that the genetic contributions of parents are dynamically weighted. The selection and activation of genes in the offspring are driven by the superfluidity properties of the genetic combinations, favoring those with higher effective superfluidity or lower viscosity. This process ensures that the synentropy regulation abilities of the next generation are optimized according to the combined genetic and $\boldsymbol{EP}$. Thus, the function of CRISPR/Cas9 or similar genetic modifications is naturally aligned with the superfluidity for synentropy.

5th case: Bose-Einstein Condensates (BECs), formed by bosons, and superfluids formed by Cooper pairs of fermions, can be viewed as macroscopic wave functions, in contrast to the microscopic Schrödinger wave function. To apply this concept to bio-systems, we need to abandon many conventional postulates and adapt the microscopic linear wave function into a non-linear wave function inspired by condensed matter physics. In the traditional framework, quantum state measurement causes the wave function to collapse instantaneously into an eigenstate, and quantum entanglement is described by Einstein as "spooky action at a distance." However, our modification suggests that the condensed state vector itself possesses a synentropy function dependent on the environment ($\boldsymbol{EP}$), as discussed previously. Due to this $\boldsymbol{EP}$ association, the collapse into an eigenstate—or any intermediate quantum state—takes time. The process occurring during this collapse is, in fact, a synentropy process. As we will later demonstrate, this duration is more appropriately described as non-simultaneous time (the Bell inequality, currently the only experiment capable of indirectly confirming the existence of quantum collapse or entanglement by ruling out hidden variables, still incapable of measuring the speed of collapse or determine whether it occurs so "spooky" as the traditionally claimed. In contrast, evidence from condensed matter and biosystems supports both the $\boldsymbol{EP}$ concerned concrete duration of this collapse time (as lifespan) and the entropy (synentropy) function associated with it).

In bio-systems, all processes are entropy-preserving synentropy processes with $\boldsymbol{EP}$ (ether memory), rather than traditional rigid energy-conservation processes. As a result, the probability of a particle's occurrence can no longer be normalized to 1 due to $\boldsymbol{EP}$. The synentropy function of the state vector is still grounded in Landau's two-fluid model, which consists of superfluid and normal liquid components. According to this model, zero viscosity cannot be detached from the normal liquid component, as no experiment can fully convert a system into a pure superfluid. Similarly, cerebrospinal fluid (CSF) contains a superfluid component that cannot be separated from the surrounding somatic structure. The interaction between these two conjugated components sustains *in vivo* superfluidity. By contrast, Schrödinger's wave function, treated as a "naked" probability (compressing wave-particle duality into a local electron), does not incorporate correlations with the peripheral tissues / $\boldsymbol{EP}$, thus lacks the basic synentropy function and can only be reluctantly called an *in vitro* presentation.

6th case: The Zero Point Energy Law of Thermodynamics through $\boldsymbol{EP}$

The Third Law of Thermodynamics, also known as the Zero Point Energy Law, primarily describes the behavior of systems at absolute zero (0 K, -273.15 ℃). Its core principle

can be summarized as a low-temperature, low-entropy trend: As temperature decreases, molecular motion and vibrations within a system slow down, reducing the number of accessible microstates. Consequently, the system entropy decreases. At absolute zero, if only a single ground state is available (with no other quantum states accessible), the system entropy is theoretically imagined as zero. However, bio-systems challenge this imagined zero entropy modulation: 1) Cryopreservation and Entropy generation. Biological cells or entire organisms frozen at liquid nitrogen temperatures (far below their optimal physiological range) often exhibit an increase in entropy rather than a decrease. The freezing process induces structural damage and molecular disarray because it shuts off $\boldsymbol{EP}$ to maintain the expected entropy degeneration outcome. 2) Superfluidity and CSF as Low-Entropy States. In biological systems, zero-viscosity superfluids, such as cerebrospinal fluid (CSF), represent the lowest entropy states. This observation stands in stark contrast to the Third Law's classical description of entropy minimization, which is based on crystalline or molecularly static states. 3) Oscillation, Biological Activity, and $\boldsymbol{EP}$. Many biological molecules and structures rely on oscillatory activity to sustain functionality. Life is fundamentally tied to these oscillations, while their cessation signals death. Importantly, most of these oscillations are intricately linked to environmental participation ($\boldsymbol{EP}$). At extremely low temperatures, the disruption of $\boldsymbol{EP}$ leads to diminished oscillatory activity. We then can conclude:
Biosystems exhibit behaviors that significantly diverge from the classical trends of the Third Law. Instead of attaining a low-entropy state, they often display increased entropy and reduced functional oscillations under extreme cold. This discrepancy highlights the necessity of $\boldsymbol{EP}$.

2. Definition of non-simultaneous time (only exists *in vivo* or inside superfluid matrix) from intrinsic irrotationality and Chu's constant.

(Fig 1b①) superimposes the rigid Cartesian coordinate (straight lines) with ether (orthogonal dotted Sine waves with colors). The intersection region of these four waves must be a **non-zeroable** region and is therefore primarily expressed as a **quadrupole** (We should understand why a traditional Cartesian coordinate system requires the inclusion of some quadrupole strings (or ether). As mentioned earlier, any point in the Cartesian system should in fact be represented as $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$,where $\boldsymbol{x}$ and $\boldsymbol{y}$ are the precisely measured Newtonian axiom parameters and $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ represent the uncertainty components. In reality, the condition of $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$=0 (or reach eigenstate) only exists theoretically (biological systems can be alive only when these $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ matrix can establish inside quantized superfluid states to conjugate with their corresponding peripheral structures). To avoid over-representing the world through purely Newtonian eigenstates, we then introduce the quadrupole(s)). The Bohr–Einstein debate was also about the nature of $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$. With a deep loyalty to Newton, Einstein argued that only the precisely measurable $(x, \boldsymbol{y})$ truly exist, and that all uncertainty components $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ can be eliminated through calculation or measurement. Bohr, in contrast, maintained that $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ persist until a collapse occurs — a "spooky" instantaneous collapse which propagating without any internal resistance or external driving force, like consciousness itself (a common misunderstanding of the speed of consciousness at that time). In reality, however, $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$ do exist continuously across both the macroscopic and microscopic worlds, and they never truly collapse as suggested. The so-called collapse can only alter $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ but can never reduce them to zero(In fact, $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ can form a series of secondary uncertainty clusters, such as $(|x_1'\rangle,|y_1'\rangle)$ till $(|x_k'\rangle,|y_k'\rangle)$). In traditional quantum mechanics, the so-called collapse merely transforms some of these clusters into others, and it is almost impossible for all $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ and their subordinates to completely vanish to zero. The notion of a complete collapse to zero in quantum mechanics actually still originates from an earlier **Newtonian Axiom**, which assumes that a system can be measured with absolute precision—thus, this discipline naturally uses the concept of "vanishing to zero" to remain faithful to a precisely measured **Newtonian eigenstate.** However, we should note that this claim is merely **faithful** to earlier scientific results, rather than being validated by the discipline itself). More importantly, the influence exerted by $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ upon a system propagates at a **finite** speed — not only far below Bohr's "spooky" instantaneous collapse, but even greatly slower than Einstein's speed of light. Thermodynamics historically preceded quantum mechanics. Although Clausius did not identify the real world parametric structure of$(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$, he did find that the disturbing $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ persistently undermined the energy-conservation parameters $(\boldsymbol{x}, \boldsymbol{y})$. No way to eliminate $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ or Carnot cycle impacts, he then interpreted it as *entropy* and initiated the (entropy generation) Second Law of Thermodynamics. It is noteworthy that Clausius's insight stands in direct contrast to Bohr's notion of the *instantaneous collapse* position for $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ in his debates with Einstein. What Clausius struggled to eliminate was postulated by Copenhagen to allow effortless "spooky" collapse (perhaps it was Schrödinger who perceived an inherent conflict between instantaneous collapse and thermodynamics thus introduced the term negentropy). Yet, despite revealing the entropy generation, Clausius still did not recognize that the entropy generation itself is still not free from surface tension regions. Under certain surface tension conditions, the accumulated entropy $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ can give rise to a two-fluid structure similar Landau's model—consisting of a quantized $\boldsymbol{EP}$ superfluid components and corresponding peripheral normal-flow parts (physically inseparable) which may sustain life. From here, $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ can then be called as the $\boldsymbol{EP}$ **Irrotational Entropy Matrix**, which means the irrotational superfluid parts can't occupy the whole surface tension item$(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ or any surface tension region has more than one quadrupole layer. Now, we can see some of the historical oversights of the universal $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$:

(Fig 1b②) reviews Einstein's photoelectric effect. Notably, in his equation, both the photon and the emitted electron share the same energy quantum $\boldsymbol{hv}$ (e.g. $\boldsymbol{E_k}= \boldsymbol{hv}$ - w , $\boldsymbol{K_{max}}= \boldsymbol{hv}$ - $\boldsymbol{h'v_0}$), in accordance with energy conservation. However, if the effect of the metal surface is non-negligible, the energy relation can instead be written as: $\boldsymbol{hv} = \boldsymbol{h'v} + |\boldsymbol{EP}\rangle$, returning to (Fig 1b①), this is $\boldsymbol{EP}$ **linearity shifting**. A photon $\boldsymbol{hv}$ strikes the metal surface and emits an electron $\boldsymbol{h'v}$ (= $\boldsymbol{hv}$ +

$|\boldsymbol{EP}\rangle$**),** When another photon hits the surface, due to the influence of the preceding interaction, the horizontal poles of the quadrupole (a non-zeroable region) shift to the right (demonstrated by the two horizontal red-dotted regions, it is critical to note that the linearity before and after the shifting can no longer rely on the same third-party reference frame based on a rigid, theoretically imposed zeroability. Instead, they must be referenced relative to each other through an elastic zeroability, which allows $\boldsymbol{EP}$ to be inserted into the non-zeroable region between them. Note, the inserted EP is not a conventionally precision measured parameter. In other words, $\boldsymbol{EP}$ may cause originally commuting parameters to become non-commuting (or reverse), as they no longer operate within a common reference frame that preserves their commutativity. Consequently, the conventional modulation of energy conservation — originally grounded in commutativity and Noether's theorem —also challenges. It should be noted that Einstein's general relativity describes gravity through the stress-energy tensor on a four-dimensional Lorentzian manifold. However, it is important to emphasize that this Lorentzian manifold still obeys energy conservation, which is fundamentally different from the quadrupoles in the entropy-based ether). Here only refer the horizontal pole shift, in fact, all four poles of the quadrupole can shift according to **Le Châtelier's principle**: when one pole is perturbed (e.g., stretched), the remaining three adjust in a way that mitigates the effect of that disturbance (S_movie 3, a modified condensed matter wave function. We can easily see the distinction between a quadrupole and a sizeless point Cartesian parameters, given four points: $(\boldsymbol{x},\boldsymbol{0})$, $(-\boldsymbol{x}',\boldsymbol{0})$, $(\boldsymbol{0},\boldsymbol{y})$ and $(\boldsymbol{0},-\boldsymbol{y}')$— any change in one parameter, such as the point $(\boldsymbol{x}\,,\boldsymbol{0}) \rightarrow (\boldsymbol{x}+\Delta\boldsymbol{x},\boldsymbol{0})$ will never affect the other three points; each remains independent. A (non-zeroable) quadrupole such as those stretchable oscillations around four positions $[|(\boldsymbol{x},\boldsymbol{0})\rangle\,, |(-\boldsymbol{x}',\boldsymbol{0})\,\rangle, |(\boldsymbol{0},\boldsymbol{y})\,\rangle \mid (\boldsymbol{0},-\boldsymbol{y}')\rangle]$ behaves differently: a change at one pole inevitably influences the others, holistically composed of a Le Châtelier's system or bio-system *in vivo* basis. Another fundamental difference lies in the nature of classical geometry. In such geometry, a line constructed from sizeless points possesses no intrinsic physical parameters; any parametric characteristics must be introduced externally through material properties. e.g., when geometry is used to describe a piece of wood or a stone, their mechanical strength originates from the material itself instead of the geometric points or lines due to such geometry inherently $\boldsymbol{EP}$ independent. By contrast, when the description is reformulated in terms of quadrupoles and quadrupole strings, the geometric entities themselves intrinsically carry parameterized characteristics grounded in $\boldsymbol{EP}$ irrotationality. A clear biological illustration is bone fracture healing: after a fracture, two bone segments can realign and heal only if the internal environment remains essentially unchanged — namely, when splint fixation preserves the relative stability of muscles, blood vessels, and ligaments. Under these conditions, healing arises naturally from the sustained internal $\boldsymbol{EP}$ rather than from externally superimposed material properties. This bone fracture example comes from a more fundamental one - superfluid wall-climbing effect (Fig. 1a② right). Superfluid wall-climbing occurs precisely because of the intrinsic irrotationality endowed by $\boldsymbol{EP}$. It is a natural consequence of quadrupole strings acquiring $\boldsymbol{EP}$ and does not require externally postulated material strength properties. The most critical distinction introduced here concerns the pull-back impact. Let a line segment AB be given with an intermediate point O. If a parameter evolves from $A \rightarrow O \rightarrow B$, and subsequently returns from $B \rightarrow O$, we call the segment BOas a **pullback**. In classical geometry, such a pullback segment BO is entirely independent of all other parameters defined on or around the line AB. In contrast, within the new geometric framework, pullback actions occurring under the same surface-tension condition become mutually coupled. We term this coupling **pullback entanglement** (definitely asymmetric). e.g., in a living cell, DNA, RNA, and proteins each possess their own pullback quantities. In a living state, these quantities become correlated through irrotational entropy. As a result, the living cellular state can't be described using classical geometry. This necessitates the introduction of quadrupole strings appropriately. Only after cell death—when these pull-back correlations collapse—does the system revert to a classical geometric description. This distinction also clarifies the limitations of Einsteinian relativity in biological contexts. Although general relativity introduces curved space–time, it remains within classical geometry. Consequently, the curvature tensor does not couple to the pull-back quantities of geometric entities embedded in that space. As a result, the gravitational effects predicted by Einstein's theory remain extremely small in low-velocity regimes, justifiably reducing to Newtonian behavior. In contrast, in bio-systems, even under low-velocity conditions, gravitational impacts arising from pullback entanglement exceed Einsteinian predictions by many orders of magnitude. This discrepancy does not originate from dynamics or scale, but from the geometric framework itself**).**

While Einstein's oversight in photoelectric effect is detailed, Planck's oversight in blackbody radiation is equally noteworthy. Although Planck's $\boldsymbol{E = nh\nu}$ was celebrated for unifying the Wien and Rayleigh–Jeans laws (Fig. 1b③), this equation did not uncover the physical cause behind. We believe that the earlier models only cover the marginal zones beyond surface tension effect, whereas Planck's $\boldsymbol{E = nh\nu}$ corresponds to the linear under the surface-tension interaction. The expression $\boldsymbol{E = nh\nu}$ effectively **conceals** the role of $\boldsymbol{EP}$ surface tension in sustaining the wave function. In non-isolated regions, the wave function arises from $\boldsymbol{EP}$; in isolated systems it becomes fragile, rendering the Schrödinger equation inherently ephemeral. The quadrupoles illustrated on the cavity wall in (Fig. 1b③) denote the **real cause** of the linearity shifting ($\boldsymbol{E = nh\nu}$).

Newton exhibited a similar oversight inherited from classical Euclidean geometry. His First Law states that an object remains at rest or moves uniformly in a straight line unless acted upon by a force, yet he never defined the origin or range of such linearity. In Newtonian mechanics, forces are precisely measurable; thus he neglected the unmeasurable influence of the environment, such as EP through surface tension. Newton's framework is an excellent physical approximation, but inadequate for biological systems. Once applied to life, the First Law has to be modified (the "sizeless point" of old geometry could be replaced by ether-based quadrupoles, and curves should correspond to quadrupole strings. Likewise, Newton's law of universal gravitation: $\vec{\boldsymbol{F}} = \boldsymbol{G}\frac{m_1 m_2}{(r_1+r_2)^2}$ assumes precisely measurable centers of mass. If we introduce uncertainties $|r'_1\rangle$ and $|r'_2\rangle$,the formula becomes$G\frac{m_1 m_2}{(\ r_1+|r'_1\rangle+r_2+|r'_2\rangle)^2}$, meaning the original holds only work when inversion energy is negligible. If $|r1'\rangle$ or $|r2'\rangle$ grow large, deviations become substantial (Inversion energy governs biological systems. As demonstrated in our previous ***FHD*** experiments [1] (S_Movie 4), a half-filled bottle of oil hit the ground earlier than a half-filled bottle of water when free fallen from a height of 7.04 m, despite being lighter—an effect due to **linearity shifting** frequency difference between liquid oscillations against their bottle walls or the liquid contact surface). Cavendish's measurement of G using rigid iron spheres assumed that the gravitational constant remains invariant (or zero motion between the surface and non-surface region of the iron spheres). This assumption holds well for even planetary-scale rigid systems, except for Mercury's perihelion precession. However, when inversion energy exceeds a critical threshold—even in non - biological contexts — simply two water droplets can exhibit a measurable deviation of G from its traditionally believed rigid value, owing to the enhanced influence of surface-tension effects. Mathematically, Newton's First Law can be rewritten [2] as: $\frac{d}{dx}cos\ (nx) =-\sin(nx)$, $\frac{d}{dx}sin(nx) = \cos(nx)$, (Fig 1b④); where n represents the **linearity range** within which the law remains valid. Beyond this range, **deviations are enlarged by** EP.

Reviewing these historical oversights, we then can understand the difference between Schrödinger's and Landau's quantum persist models. As in (Fig. 1b⑤), the oversight of Schrödinger's equation lies in giving generations of scientists the impression that gravitational forces acting on electrons are far weaker than other forces and therefore can be neglected. However, few have recognized that in the **Schrödinger-cat superposition**, gravitational effects are **geometrically accumulated**. In our **Cavendish mutation experiments [1]**, the measured gravitational constant G between a living and a dead organism differed by around **10⁹ fold**. This occurs because a living organism is deeply engaged in **irrotationality coupling with** EP; once death occurs, this somatic irrotationality largely disappears. The resulting increase in the measured weight translates to a **10⁹ level shift in** G (We still need to clarify that Newton's universal gravitational constant G is defined as fixed under the paradigm of energy conservation. In cases where surface tension or inversion energy remains small, this approximation continues to hold remarkably well. However, our experimental observations reveal variations of G by up to 10^9 levels, which arise simply because biological systems can rely only on EP irrotational entropy rather than conventional energy for survival. Nevertheless, these variations do not represent a deviation from Newton's original law, but rather serve as its quantized gravitational superfluid compensatory extension).This experiment confirms three points:① Newton's law of universal gravitation exhibits increasing error once **inversion energy** exceeds a critical threshold; ② this inversion energy corresponds to the $(|x'\rangle,|y'\rangle)$ portion of the parametric structure $(x+|x'\rangle, y+|y'\rangle)$, proving the intrinsic relation between the **wave function** and EP; ③Parallel experiments [1] further support: i. germinated mung bean and soybean seeds exhibited much higher ***FHD*** values than the same condition raw seeds, indicating that germination enhances irrotationality; ii. Humans, diving from a 10 m commercial platform showed significantly greater ***FHD*** than a non-living metal bar; iii. Animals exhibited observable ***FHD*** variations before and after sexual activity. Collectively, **life originates within the surface-tension domain** $(|x'\rangle,|y'\rangle)$ and inherently follows **entropy preservation** rather than **energy conservation**. Landau's original irrotational modulation is difficult to interpret through conventional mathematics because his equations were based on precisely measured Newtonian data. In living systems, however, irrotationality arises mainly from EP or unmeasurable parameters i.g, the human spine can rotate slightly at each segment, these local rotations produce non-zero curl by third-party rigid reference, but inside the ether or along quadrupole strings, once each vertebra can restore its state through EP, the structure remains irrotationality (this "elastic irrotationality" represents innate bio-immunity or bio-inertia).

As we have proposed that life originated from an irrotational whirlpool [1], if the rotational velocities of the whirlpool fluid $\omega 1, \omega 2, \dots, \omega k, \dots \omega n$, are equal or quantized by integer multiples, the system possesses irrotationality (In Newtonian axioms, the **zeroable process** is described by the classical sizeless-point geometry, where an object maintaining a constant relative velocity with respect to a reference frame is defined as being at rest. In contrast, **irrotationality** takes new non-sizeless point quadrupole geometry: when rotational velocities are either uniform or exhibit a quantized gradient, a new structural state emerges and remains stable—analogous to the notion of rest in the Newtonian era.) Every biological structure—from DNA, RNA, proteins, and binding sites to spinal motion—follows this principle. (In contrast to Einstein's framework, where translation is covariant but rotation is not, irrotational entropy within ether is reversed: rotation can be covariant, while translation is not). Although irrotationality was almost forgotten in the scientific realm after Landau, it has been implicitly applied in music for centuries. We can now integrate Shannon entropy connotation into music to see how this continuity has been preserved, —and subsequently reapply to modulate EP irrotational entropy for bio-systems. Shannon defined the information entropy $H(X) = -\sum_{i=1}^{n} P(x_i)\, log_b\, P(x_i)$ as a measure of uncertainty; higher uncertainty means higher entropy. This uncertainty corresponds to our concept of non-zeroability: the larger the non-zeroability, the greater of the entropy. From this connotation, as shown in (Fig. 1c①) left, the musical scale satisfies the linearity relations: ***Wavelength*** $= \frac{2}{n}L$, ***frequency*** $= nf_0$. The right panel of (Fig. 1c①) shows a musical scale derived from Chu's constant $\sqrt[12]{2^{2n-1}}$ (it was first derived by the Chinese scientist **Chu, Tsai-Yü** in 1581 —so we called it as **Chu's constant** [7]). We can see from the following that the scale is not uniform:

Scale: C: $\left|\sqrt[12]{2^{2-1}}\right\rangle$ D: $\left|\sqrt[12]{2^{4-1}}\right\rangle$ E: $\left|\sqrt[12]{2^{6-1}}\right\rangle$ **F**: $\left|\sqrt[12]{2^{8-2}}\right\rangle$ G: $\left|\sqrt[12]{2^{10-2}}\right\rangle$A: $\left|\sqrt[12]{2^{12-2}}\right\rangle$ B: $\left|\sqrt[12]{2^{14-2}}\right\rangle$, Ċ: $\left|\sqrt[12]{2^{(2-1)+12}}\right\rangle$

triad: C: $\left|\sqrt[12]{2^{2-1}}\right\rangle$., E: $\left|\sqrt[12]{2^{6-1}}\right\rangle$, G:$\left|\sqrt[12]{2^{10-2}}\right\rangle$

in the major scale C-D-E-F-G-A-B, there are only half-steps for E–F and B–C ($step\ of\ which\ in\ \sqrt[12]{\mathbf{2^{2n-1}}}$ is **1**) and those between others are full step (step of which in $\sqrt[12]{\mathbf{2^{2n-1}}}$ is 2). Here we can then call the position E-F and B-C as **Shannon entropy loci** or higher entropy loci because the stability of them is inferior to other full step positions.

And the fundamental principle of composing or entropy preservation is: any form of superposition must preserve the Shannon-entropy loci in the series. Now we can use a simple triad such as C-E-G to as an example, C-E-G(1, 5, 8) is the root triad. If the root note **C** of the triad is raised by one octave (any period that not necessarily octave in music if apply universally) so that **E** becomes the new root, the resulting chord is **E–G–C (5,8,** $\dot{\mathbf{1}}$**) is called** the **first inversion**; similarly, if **G** is turned over in the root position, **G–C–E (8,**$\dot{\mathbf{1}}$**,**$\dot{\mathbf{5}}$**) is called** the **second inversion (a** triad has only two inversions, the largest **thirteenth chord in music**—can have up to $\boldsymbol{n-1}$, that is, **twelve inversions)**. With this background, we can now understand the difference between **the Schrödinger-cat superposition under energy conservation** and the **Laudau**'s **irrotational superfluid superposition** under entropy preservation.

Let us still consider the above example: a melody (simplified as the scale) and an accompaniment (simplified as the **C-triad**) can be viewed as two quantum states being superposed. The fundamental principle of **musical superposition** is that, regardless of variation, the **Shannon - entropy loci must remain invariant** — that is, the melody and the accompaniment in the same **irrotationality**. According to this requirement, when we add accompaniment to a melody, although one might intend to superpose **C** onto **E**, the requirement of preserving the entropy positions prevents the use of the **root triad (C–E–G)** directly; instead, the system may automatically shift to the **first (E–G–C)** or **second inversion (G–C–E)** of the triad, depending on the melodic progression direction. In essence, **quantum-state superposition** should be understood as the **superposition of parametric momenta**, rather than the direct superposition of parameters themselves. If one superposes C $\left|\sqrt[12]{2^{2-1}}\right\rangle$ that represents the superposition of the parameter itself; but if the environment transforms C $\left|\sqrt[12]{2^{2-1}}\right\rangle$ into E $\left|\sqrt[12]{2^{6-1}}\right\rangle$ before superposition, the process is then the **superposition of parametric momentum** (as mentioned previously, ***EP*** momenta are intrinsically correlated with whether a system is alive or dead. Consequently, once life ceases, the capability for sequential transfer and subsequent superposition— or the bio-immunity capacity—almost vanishes completely). In contrast, the Schrödinger-cat superposition in quantum mechanics operates differently. Traditional quantum mechanics postulates linear superposition as follows: $|\boldsymbol{\Psi}\rangle = \boldsymbol{a_1}\left|\sqrt[12]{2^{2-1}}\right\rangle + \boldsymbol{b_1}\left|\sqrt[12]{2^{6-1}}\right\rangle + \boldsymbol{c_1}\left|\sqrt[12]{2^{10-2}}\right\rangle$, no inversion among $\left|\sqrt[12]{2^{n-1}}\right\rangle$,this discipline then attempts to extract probabilities from these coefficients of the series. We can see this postulated linear combination is unrelated with the **Shannon entropy loci** of the two states before and after superposition. If you were to tell a quantum physicist that—because of ***EP*** that the state $\left|\sqrt[12]{2^{2-1}}\right\rangle$ is automatically transformed into $\left|\sqrt[12]{2^{6-1}}\right\rangle$ for entropy preservation momentum, they would utterly inconceivable, since such process directly contradicts the traditional postulates of quantum mechanics or Schrödinger equation, they try to find the probability of one particle and it automatically inverse to the probability of another one (manifest of ***SLE***). However, in musical kingdom, people have already applied these sorts of anti-quantum-mechanical **postulated** superposition for centuries (if a composer were to write melody and harmony through Schrödinger's linear method of superposition, the resulting sheet music would sound extremely unpleasant because no ***EP*** can be absorbed by this arbitral Copenhagen superposition). This reveals the fundamental distinction between Schrödinger's and Landau's quantum modulations. Schrödinger-cat's quantum superposition has no irrotationality restriction thus lack synentropic functionality. Landau's condensate quantum state, however, bases on irrotationality and only exists within the superfluid zero-viscosity regime, which does not consume system internal energy but intakes and internal shifts outside ***EP***. The Schrödinger superposition can be roughly regarded as an *in vitro* process, whereas biological inversion superposition represents an *in vivo* process.

Under the extreme lower temperature, Landau's superfluid zero viscosity forms the foundation of no system internal energy cost wall climbing on extremely cold condition(< 10k)[6], such frictionless motion arises only when quantized irrotationality emerges (Fig. 1b②); otherwise, the fluid would merely slide downward rather than ascend. The room temperature (10-37℃ equivalents to 283.15-310.15k) condensed state biological systems still exhibit the similar mechanism. It is commonly assumed that an animal heart alone pumps blood through the entire vascular network, including distant capillaries. In reality, the heart cannot directly propel blood to those remote micro-regions. The terminal capillaries rely instead on the similar superfluid wall-climbing effect, where the infiltration is sustained by irrotationality of the surface tension (ref. the final part of S_Movie 5). Aging begins when this capillary-level irrotational wall climbing effect decays, marking the gradual loss of superfluid wall climbing circulation at the somatic terminations.

Geometrically, we noted that the quantum state vector of traditional mechanics is still constructed upon the old sizeless -point geometry. By reformulating it in terms of quadrupoles (point with size and quadrupole string equivalent to a curve in old geometry), we define the spinal vector, which includes both the superfluid and a peripheral structure under ***EP*** (in Landau's model the superfluid must coexist with a normal liquid). Unlike the naked probabilistic form of Schrödinger's wave function, the spinal vector continuously depends on ***EP*** irrotational Entropy, in this framework, represents non-zeroability; the propagation of entropy is the propagation of non-zeroability, and the quantization of entropy arises from the formation of irrotationality between surface tension and the spinal vector. This interaction constitutes the fundamental basis of biological stability and life. Returning to the musical example, the preservation of Shannon-entropy loci ensures that the system performs inversion before superposition. In our earlier triad example, replacing the root triad with its first or second inversion transfers entropy between the system and its environment, such transfers represent n-turnovers, for instance when n oscillates among 1, 5, and 8. Originally, one might attempt to superpose $\left|\sqrt[12]{2^{2-1}}\right\rangle$, yet the system through environmental adjustment—automatically changes it to

$\left|\sqrt[12]{2^{6-1}}\right\rangle$ or $\left|\sqrt[12]{2^{10-2}}\right\rangle$ for entropy preservation. This oscillation can be then defined as n-turnover **non-simultaneous time**. (Einstein's **Special Theory of Relativity** already contains components of **non-simultaneous time**. In a rigid reference frame, relative velocity is classically expressed as $V = V_1 + V_2$, Einstein discovered that $V_1 + V_2$ can never exceed the speed of light, leading him to write down relativity through Lorentz contraction. From the standpoint of **non-simultaneous time**, the Lorentz contraction means that V_1 and V_2 continuously **oscillate around the speed of light**, absorbing $\boldsymbol{EP}$ to maintain (the musical counterpoint technique—extend a melodic into two or more **asymmetrical reverse** lines—is essentially the same process: two or more parameters oscillating around a central parameter.). In the same sense, our **non-simultaneous time model** describes how two quantum state vectors with different n values **shift linearly** under a common **spinal vector**. The duration of their mutual oscillation defines their **non-simultaneous time.** Einstein formulated relativity based on the premise that **only light** can experience an extremely small degree of degeneration during motion. However, he did not realize that **surface tension** in low-velocity Newtonian systems still can undergo degeneration many **folds of magnitude greater** than that associated with light speed in rigid system. It is this kind of **surface-tension degeneration** that gave rise to **life and evolution**. In this sense, **life emerges when chaotic entropy degenerates into irrotational superfluid entropy**—hence, **the lifespan of living systems must be finite (**In classical geometry, a simultaneous time point is modeled as an ideal dimensionless point, conceived as the superposition of two time "sizeless" points. In the ether framework, however, such a point unfolds into a quadruple structure. Consequently, the description of a "happen-together" event becomes the superposition of two quadrupole (string)s, and the intrinsic oscillatory nature that had been suppressed by the sizeless -point geometry is released into a non-simultaneous time oscillation. While Newtonian mechanics can approximate time as rigid and therefore does not require this unfolding, biological systems—especially their superfluid components—must restore this oscillatory modulation in order to distinguish between living and non-living states. While Newtonian mechanics can approximate time as rigid that does not require such unfolding, biological systems—especially their superfluid components—must restore this oscillatory modulation for distinguishing between living and non-living states**)**. A parallel example can be found in the **surface tension of biological membranes**. Consider a quadrupole whose two poles lie horizontally along the membrane, while one vertical pole oscillates outward and inward. The continuous exchange between the inner and outer poles defines **non-simultaneous time**. If described using rigid time, one could quantify the proportion of time the pole spends inside versus outside the membrane; but as **biological active time**, it corresponds to the **oscillation period** of the poles plus $\boldsymbol{EP}$ —a unified "alive" duration. Once this oscillation ceases or $\boldsymbol{EP}$ intake fails; the membrane dies, and **non-simultaneous time disappears** but rigid time still there (Note: rigid time is defined only with respect to an external third-party reference frame, while non-simultaneous time arises from the ether without third-party precision but filled with parameter inversion processes, here inversion is the only intrinsically signal transmission manner).

On the lower right of Fig. 1c①, we illustrate entropy flow establish in a rigid body. For an ideal spinning disk, the Newtonian centrifugal force $\boldsymbol{F} = \boldsymbol{M\omega^2 r}$ applies. If a small red nail is fixed on the disk, it introduces a perturbation—its position defines a Shannon-entropy site. When separated by a surface, the governing relation becomes $\boldsymbol{F} = \boldsymbol{m\omega^2 r} + |\boldsymbol{EP}\rangle$, indicating that $\boldsymbol{EP}$ impacts motion. In solids, this causes stochastic irregularities and deformation; in liquids or superfluids, it induces Le Châtelier-driven $\boldsymbol{EP}$ motion. Thus, when inversion energy is small, motion is roughly energy-driven (rigid regime); once it exceeds the biological threshold, motion becomes entropy-driven, most real world systems existing between these limits. In liquids, the formation mechanism of entropyflow is often easier to visualize than in solids. Consider a whirlpool in a stream of water containing several dissolved components. When a few red nails are dropped into the vortex, they begin to rotate with the flow. These nails act as Shannon entropy loci, because—unlike the dissolved substances—they do not readily disperse into the surrounding liquid. The various dissolved components, in turn, adjust their motion according to each nail's trajectory. In the previous musical example, we noted that regardless of how the melody evolves or who the composer is, **the Shannon entropy loci remain invariant**. This invariance is analogous to the nails in the vortex: as long as the entropy loci do not vanish or the nails are not dissolved—they continue to govern the motion of all surrounding dissolved components. The first and second inversions of musical triads correspond to the whirlpool motions of different dissolved substances around the nails. As long as the nails rotate in the whirlpool, these dissolved components can only undergo continuous inversions around them. They can neither surpass the nails nor cause them to vanish within the vortex. Or regardless of how the vortex evolves, the dissolved substances remain governed by the irrotationality of the nails (Note that when several substances dissolve in a liquid, traditional chemistry (based on Newtonian axioms that neglect surface tension) believes a uniform solution. In reality, this is only the most idealized condition. Once the above undissolved things like the nails are put into the fluid vortex, surface tension can no longer be ignored. These substances rotate around nails to establish their different entropy preservation niches. As a result, the classical notion of a uniform liquid can no longer be achieved.). From this perspective, the motion of musical composition is essentially the motion of its Shannon entropy locus vortex. Likewise, from the origin and evolution of life to its regulatory processes, biological systems are governed by the same underlying dynamics of Shannon entropy loci in a whirlpool. Although the complexity differs greatly, the fundamental mechanism remains the same—the preservation of irrotational entropy through continuous inversion around entropy loci. It is noted that even the non-living being magic-angle graphene superconductivity can be understood within the same $\boldsymbol{EP}$ Shannon loci irrotationality. As shown by Cao et al., twisting bilayer graphene [8] to the ~1.05° "magic angle" compresses its kinetic spectrum into flat bands, forcing electrons into a **collective, correlation - dominated regime**. This condition corresponds to a **superfluid irrotational state** in which internal dissipative modes collapse and the system no longer consumes its own energy. Instead, motion is sustained through non-dissipative, entropy preserving flow redistributed via $\boldsymbol{EP}$, making the observed superconductivity a direct physical manifestation of the $\boldsymbol{EP}$ irrotational entropy modulation.

The inversion processes have been modulated by Chu's constant; alternatively, an equivalent trigonometric representation can be employed. For instance, modulation of the C triad—C$\left|\sqrt[12]{2^{2-1}}\right\rangle$, E$\left|\sqrt[12]{2^{6-1}}\right\rangle$, G $\left|\sqrt[12]{2^{10-2}}\right\rangle$ —by Chu's constant corresponds to $\boldsymbol{sin/cos\ x, sin/cos\ 5x, sin/cos\ 8x}$. Then the first inversion: $\boldsymbol{sin/cos\ 5x, sin/cos\ 8x}$, $\boldsymbol{sin/cos\ x}$, and the second inversion: $\boldsymbol{sin/cos 8x}$, $\boldsymbol{sin/cos\ x}$, $\boldsymbol{sin/cos\ 5x}$, only such inversion process can intake $\boldsymbol{EP}$ from the environment or internal partners. We believe these two methods—Chu's constant modulation and trigonometric transformation—are equivalent in describing $\boldsymbol{EP}$ irrotational entropy preservation.

Bio-inertia can now be defined from surface-tension(s). As shown in Fig. 1c② (left), capillary rise in a thin tube—analogous to the climbing of superfluids—requires irrotational spinal vectors across quadrupole strings. Interior water molecules are balanced in four directions, but surface molecules experience only three; the recovering of fourth direction, compressed by the surface, drives a tangential Le Chȃtelier flow to restore irrotationality, causing capillary elevation. This dynamic degeneration—where identical quadrupoles become slightly non-identical at the boundary — underlies many biological surface phenomena. Even the male organ erection runs by the same mechanism: just surface tension derived from spinal CSF replaces the role of capillary walls, with identical irrotational mechanics at vastly different levels. Here, bio-inertia can be defined: Whereas Newtonian inertia involves $(\boldsymbol{x},\boldsymbol{y})$ and defines motion persistence without external force, biological inertia concerns $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ —the ability of a system under $\boldsymbol{EP}$ to preserve irrotationality (Newtonian inertia is founded upon precisely measurable quantities such as mass, which allow a system to maintain its state of motion in the absence of external forces. Any unmeasurable influences such as inversion signals transmitted through a surface-tension region or chaotic entropy—are regarded as negligible. In contrast, bio-inertia operates almost entirely under the influence of those very factors that Newtonian mechanics must neglect. Newtonian inertia can be altered only by force, whereas bio-inertia can only be altered only through irrotationality. Force is a quantity that can be readily measured and artificially controlled; irrotationality, by contrast, is exceedingly difficult for current technology to manipulate directly. Although inversion energy was originally defined under Chu's constant within the context of superfluid or surface tension matrix, the inversion process itself is universal—provided we do not impose Newtonian simplifications that reduce $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle$ into merely $(\boldsymbol{x}, \boldsymbol{y})$). Every physical entity contains both surface tension and non-surface tension regions, across which inversion inevitably occurs at different degrees due to their distinct responses to the same gravitational field. Before inversion becomes quantized to superfluids, $(|\boldsymbol{x}'\rangle,|\boldsymbol{y}'\rangle)$ remain chaotic entropy that omnipresent throughout nature. When certain inversions synchronize in irrotationality (or when their rotational velocities become identical or quantized from $\boldsymbol{EP}$)—then establish **entropy flows**. This entropy flow, in turn, dynamically determines which inversions will join and which will decay or detach (similar to a whirlpool select those approach/detach by momentum). The ability to perform such irrotational selection defines **bio-inertia**. Organisms exhibit multiple hierarchical levels of entropyflow; with the lowest irrotatioanl entropy or largest immunity of somatic body is embodied by CSF. The necessity of sleep in biological systems arises from this mechanism: Sleep functions as a restorative process that reestablishes CSF irrotationality, which becomes over-inverted during daytime immunity (linearity shifting). In essence, every biological process, without exception, is selected by such bio-inertia $\boldsymbol{EP}$ irrotationality. Inside the CSF, the Archimedean principle of buoyancy remains conceptually valid. The classical principle, originally devised to measure the purity of a crown, states that the buoyant force on an object equals the weight of the fluid it displaces. In CSF, —this principle can be reformulated as the **Superfluid Archimedean Buoyancy Principle**:

The irrotationality displaced by a superfluid matrix is equal to the irrotationality it intakes via $\boldsymbol{EP}$.

This modified principle applies to both single and multi-folded surface-tension regions. It underlies the **invariance of Shannon entropy loci**, while the superfluid exerts a powerful leverage effect on the surrounding normal fluid, allowing a minute signal within the superfluid domain to induce (via quadrupole **pullback entanglement**) a disproportionately large response in the coupled peripheral normal-fluid system—we then described as the **Superfluid Level Effect ($\boldsymbol{SLE}$)**. What we commonly observe such as **genetic mobile elements**, **jumping genes**, and diverse signal transductions are, in essence, tangible manifestations of the $\boldsymbol{SLE}$. Likewise, what we describe as binding sites in gene–protein interactions are in fact stabilized through physical irrotationality, rather than through any notion of random mutation or presumed "genetic logic." The Central Dogma of Molecular Biology, along with much of modern genetics, was historically constructed upon Newtonian axioms—a framework that ultimately storied today's precision medicine. Yet this Newtonian view stands in fundamental contrast to the true irrotational dynamics underlying life and evolution. For this reason, the entire field of biological sciences now call for an overhaul by $\boldsymbol{EP}$). (Fig. 1c③) presents a musical example of linearity shifting, where the n-shifts between melody and accompaniment represent $\boldsymbol{EP}$ absorption—the functional manifestation of bio-inertia. Finally, (Fig. 1d①) and (**S_Movie 5**) demonstrates how bio-inertia drives biological motion. Using a foxtail-grass toy, the quadrupole irrotational entropy issues motion. When the foxtail is pulled by tweezers, motion is energy-driven, since no quadrupole interaction occurs. However, when vibration is introduced through the string orbit, motion becomes entropy-driven. The foxtail hairs vary in length and elasticity, yet those sharing the same irrotational phase collectively generate propulsion. In *in vitro* setups, entropy transfer requires such mechanical mediation (the two strings), whereas in *in vivo* systems, entropy propagates three-dimensionally through etheric elasticity. The lowest-entropy structure in the human body is CSF. All living motion is propelled by irrotational entropy. Conventional biology mistakenly models such cell migration processes through energy conservation models, failing to recognize their true entropy-preserving essence. In addition to demonstrating the entropy-driven motion of foxtail grasses, the last part of the highly reproducible (S_Movie 5) also provides fresh observational evidence. As mentioned earlier in this paper, the heart alone cannot pump blood into the distal capillaries. These micro-regions rely entirely on a wall-climbing mechanism analogous to the wall-climbing effect of condensation observed at ultra-low temperatures, yet occurring here at room temperature. This conclusion is supported by the final part of this video — a fresh observation video of a mouse hippocampus (2016, Tsinghua University, also conducted fresh observation of mouse liver, intestine, etc., got the same results. 18-week Jackson 003291-C57BL/6-Tg (CAG-EGFP)1Osb/J mouse, medical science building B343). Within nine hours after the mouse's death, active cell migration in the distal capillaries could still be observed by the **fresh observation method**. At this stage, the mouse's heart had completely stopped and was physically separated from the hippocampal tissues, rendering it incapable of providing any pumping function. This clearly supports our conclusion that motion in distal capillaries is driven by irrotational wall-climbing effects rather than by conventionally assumed energy conservation cardiac activities, and further provides evidence that the basis of natural immunity remains rooted in irrotationality.

3. Ancient and modern cases of (gravity quantizing) *EP* irrotational entropy

CASE I: The first case we will present here is again the **Bohr-Einstein debate**, the first major issue in the debate concerned the conflict between precise measurement and uncertainty. On this point, Bohr's interpretation was closer to reality. However, the second issue—the nature of entanglement itself—remains different. Even if we temporarily set aside the so-called "spooky" propagation speed weakness of Bohr's entanglement claim, the issue of whether entanglement is local or global still there. From our two-fluid framework, Einstein's position—that entanglement is conditional rather than absolute—is much closer to physical reality.

In this framework, quantum entanglement can occur only inside the superfluid domain, while its entanglement with the inseparable peripheral normal fluid is necessarily **asymmetric** and **conditional**. The entanglement inside the superfluid is nearly symmetric but never perfect, whereas its coupling with the peripheral fluid is inherently **non-symmetric**. The discrepancy between symmetry and asymmetry (inside the superfluid section) corresponds to the ***EP*** we discussed earlier. Due to ***EP***, an infinitesimal asymmetry originating within the superfluid domain can invert and expand into a much larger asymmetry within the peripheral normal-fluid region. In biological systems, this can generalize into a rule of evolution: the more advanced the organism, the stronger the emergent asymmetry. Bohr's concept of absolute entanglement arose historically from early quantum mechanics, which neglected surface tension and treated the wave function as a "naked probability"—or more precisely, assumed that a quantum state could exist identically both inside and outside such boundaries. Consequently, it failed to recognize that even a minute asymmetry in the superfluid part can invert into a substantial asymmetry in the peripheral structure. From this historical perspective, we can now better understand our previously defined concept of **non-simultaneous time**—a configuration in which two or more parameters oscillate reciprocally around a central parameter while exerting minimal influence on its motion. In such systems, the oscillating parameters cannot be perfectly symmetric, yet their asymmetry remains confined—perhaps separated only by a thin surface-tension layer (may be conditionally a folded boundary surfaces). Although this local difference may appear negligible, it can invert dramatically at the peripheral level. A small local signal—seemingly trivial within its non-simultaneous domain—can trigger large-scale systemic responses throughout the organism, even extending to its perception of the external world-which is the brain thinking process (base on sense organs). From this perspective, the fundamental function of the brain–spinal system is to generate the **Superfluid Level Effect (*SLE*)** we mentioned earlier. In the same conceptual framework, quantum entanglement within a biosystem must inherently be asymmetric, and biological senility can be understood as the progressive **damping of this *EP* polarity**. Moreover, sexual differentiation and behavior across species also arise as natural consequences of this underlying gravity-quantized ***EP*** -driven polarity. Behind the Bohr–Einstein debate on whether quantum phenomena are local or non-local hides a long standing historical legacy: **Is quantum entanglement fundamentally symmetric**? If one accepts the conventional symmetric formulation of quantum entanglement, then the biological polarity we just mentioned becomes a direct empirical counterexample to clearly support Einstein's position in this debate. Einstein's only limitation in the debate was his refusal to accept parameter uncertainty, but in all other respects his critique remains essentially effective.

CASE II: The non-simultaneous time quiddity of memory from ancient Kungfu Loong acupoint irrotationality

We can now return to Joseph Needham's well-known question from history:

"Why did China, having been so far ahead of Europe for fourteen centuries, fail to generate modern science?"

As in Table 1, early Chinese and Western civilizations — despite countless cultural differences—were grounded in broadly similar geometric intuitions, and importantly, these early intuitions never excluded inversion. The decisive divergence came much later, when Newton founded classical mechanics upon Euclidean, sizeless-point geometry, establishing what would become the conceptual and institutional foundation of modern science. Ancient China never formalized such a sizeless-point geometric framework, yet its intellectual development did not stagnate. From $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$, Western culture can be regarded as evolving along $(\boldsymbol{x}, \boldsymbol{y})$, whereas Chinese Kungfu Loong irrotationality along $(|\boldsymbol{x}'\rangle, |\boldsymbol{y}'\rangle)$ and also further develop them.

Newton's success lay in effectively postulating that $(\boldsymbol{x}+|\boldsymbol{x}'\rangle, \boldsymbol{y}+|\boldsymbol{y}'\rangle)$ can always be reduced to $(\boldsymbol{x}, \boldsymbol{y})$—a move so influential that even when quantum mechanics arose (as symbolized by the famous Bohr–Einstein debates we discuss in last case), physicists did not dare depart from the deeply entrenched worldview of **energy conservation**. Thus quantum mechanics remained "immature" which unable to break free from the Newtonian Axiom. Even Landau's later irrotational two-fluid modulation—which hinted at a surface entropy paradigm— was soon marginalized under the dominance of Newtonian institutions. China, by contrast, never stepped fully into Newton's ($\boldsymbol{x}, \boldsymbol{y}$). This was a disadvantage: China entered the industrial age several centuries later than the West, and when it finally industrialized, it did so using the same Newtonian theoretical system developed in Europe (hence in Table 1, China's industrial revolutions are marked under political leaders rather than scientific innovators). Yet this historical limitation turned into a unique advantage. Because China never fulfil the step of Newton Axiom, its cultural evolution along ($|\boldsymbol{x}'\rangle, |\boldsymbol{y}'\rangle$) remained uninterrupted. When China finally industrialized in the 20th century, it compressed what took the West three to four centuries into only a few decades. More importantly, China inadvertently preserved a cultural environment more compatible with the inversion entropy -driven quantum than that of the Western world. The basic postulation of quantum mechanics principle: $|\boldsymbol{\Psi}\rangle = \boldsymbol{c_1}|\boldsymbol{\Psi_1}\rangle + \boldsymbol{c_2}|\boldsymbol{\Psi_2}\rangle + \cdots \boldsymbol{c_k}|\boldsymbol{\Psi_k}\rangle$, it holds exactly only when the **inversion impact is zero**, a condition that occurs with extremely low probability in the real physical world (i.g. suppose $\boldsymbol{n}$ =3, it is then the musical triad we discussed earlier. Such inversion superposition occurs with extraordinarily higher rate than the zero-inversion pattern postulated by Copenhagen intepretation). However, western quantum physicists unfamiliar with musical inversion superposition that already widely applied in European continent, unintentionally shape the quantum mechanics in a format we see today. In contrast, ancient Chinese people not only employed inversion in music but in almost all dimensions of culture, esp. the kungfu training system. We can now see how this spinal converging cultural heritage enables China to fulfil industrialization within so short a period.

Table 1. Chinese and Western Cultural Evolution under (x+|x′⟩, y+|y′⟩)

Approx. Time	Western Science / Industry	China – Industrial Line	China – Dragon Culture Line
4700–2900 BCE			Jade Dragon (5000–5500 yrs) (Fig 1d②)
1600–771 BCE			Kneeling entropy converging (Fig 1d②)
495 CE			Shaolin entropy converging (1500 yrs) (Fig 1d ③)
1400 CE			Wudang Entropy Converging (Wudang Taihe 620yrs) (Fig 1d ③)
1581			Chu, Tsai-Yü, 12-TET
1687	Newton's Principia — foundation of energy-conservation mechanics		
1760–1840	IR1: Mechanization Steam power; factory model emerges		
1870–1914	IR2: Electricity, thermodynamics, large-scale industry		
1960–2000	IR3: Relativity + immature quantum mechanics Semiconductors; automation		
2010–now	IR4: Information revolution Cyber–physical systems		
1949–1970s		Mao-era (1949-1978), closed industrialization, IR1-IR2 (1949, GDP: 12.3 bn USD, per capita: ~23 USD, -1978, GDP: 156 bn USD, per capita: ~156 USD, Global ranking: over 50 countries)	Cultural continuity basis of inversion quantum mechanics
1978–2010		Deng-era(1978–2010), open industrialization, IR1-IR4, reached No. 2 global rank; GDP ≈ 6.19 trillion USD; per capita ≈ 4,578 USD)	Note: inversion quantum modulation is different from the Copenhagen quantum model

The key distinction between ancient Kungfu training and modern sports (rooted in Greco-Roman physical culture) is that modern sports train only the peripheral muscle-based structures of the body, whereas ancient Chinese kungfu necessarily incorporates spinal training as an essential component. Traditional kungfu training consisted of two integrated parts. The first resembles modern athletics: running, jumping, horseback riding, archery, and the use of various ancient weapons, etc. The second category—spinal (integration) training—is entirely absent in Western sports. In ancient China, the Loong served as the symbolic totem of the human spine. Even in today, Wudang and Shaolin still call the spinal training as "active big Loong". (Fig. 1d②, left) shows one of the earliest known jade Loong artifacts, dated to the 4700–2900 BCE range. Spinal training itself was practiced at two distinct levels:

1) **Laymen spinal training life**, undertaken by ordinary people; and
2) **Professional training life**, which differed from lay practice primarily through the strict regulation of sexual behavior required for expert development. (Fig. 1d②, right) depicts a kneeling jade official dated to approximately **1600–771 BCE**. From that period onward, individuals across ancient Chinese society—regardless of occupation or social rank—overwhelming majority commonly adopted this kneeling posture in daily life. This represented the earliest form of socially pervasive laymen spinal entropy converging training (we use **entropy preservation** in theoretical contrast

with **energy conservation**; when describing training practices, we use converging, because convergence itself provides a judgment whether a training is successful, any divergence result indicates training failure. i.e., diabetes can be interpreted as a reversal of sugar-converging capability, resulting in excessive dispersion of blood glucose into urine)
This laymen mode of daily spinal converging is now rarely seen in modern China: within Kungfu lineages it survives only in beginner-level training before being replaced by more advanced cross-legged trainings, and among the non-kungfu population it has disappeared entirely under Westernized sitting habits such as chairs. Interestingly, contemporary Japan still preserves this posture in everyday life—a cultural inheritance transmitted during the Tang dynasty by the Chinese monk Jianzhen—which today survives in Japanese daily life far more completely than in China itself. Be carefully noted, that this posture did not arise from a shortage of stools or chairs; rather, it persisted because it provides a far more efficient entropy converging function for laymen longevity. (Fig. 1d③) illustrates three classical modes of professional spinal converging: cross-leg sitting, Shaolin converging, and Wudang converging. However, these professional systems require long-term training, a good Shifu (師傅) and a lifestyle of abstinence, and therefore their longevity effect is not as efficient for the general population as that of the simple kneeling posture. It is also noteworthy that contemporary Japan, which preserves this posture more faithfully than modern China, consistently reports the world's highest average life expectancy—a correlation that may reflect the long-term cultural retention of this ancient Chinese spinal-converging practice. This posture persisted in China from around 1600 BCE all the way to the fall of the Qing dynasty (c. 1911). Although it has largely disappeared from laymen daily life today, its more than three millennia of social standard life practice suggests a positive correlation with China's ability to achieve, within only a few decades, an industrial advancement that took Western countries three to four centuries to complete.

Spinal training is not an isolated practice. While peripheral training strengthens individual components of the body—some exercises enhancing hand muscles, others strengthening the legs, some building power, and others improving flexibility—the role of spinal training is to coordinate all these peripheral developments into an integrative functional system. The entry level of professional spinal converging begins with cross-legged sitting. Advanced forms include Shaolin converging, with more than 1500 years of recorded history, and Wudang converging, whose Wudang Taihe system has over 620 years and can be regarded as an updated form derived from Shaolin. All of these advanced systems employ adversity-based training, where the practitioner intentionally works against controlled hardship so that the spine can integrate and regulate the effects of all other peripheral training in the period.

In the **Shaolin converging** system shown in (Fig. 1d②), the practitioner is suspended at point **O** and oscillates between points **A** and **B** with varying periods and frequencies like a simple pendulum. In the Newtonian mechanics the motion of a pendulum is governed only by the **rigid-time** formulas:

$$T_{rigid} = 2\pi\sqrt{\frac{L}{g}}, \rangle \qquad \text{(small angle)}$$

$$T_{rigid} = 4\sqrt{\frac{L}{g}}\, k\,(sin\,\frac{\theta_0}{2}) \qquad \text{(large angle)}$$

The addition of the EP term transforms rigid time into non-simultaneous time (inside the ether matrix) :

$$T_{non-simultaneous\ time\ (in\ ether)} = T_{rigid} + |EP\rangle$$

and Shaolin spinal training is designed to accumulate this $|EP\rangle$ component to attain longevity and efficiency of other training, because the human body can utilize non-simultaneous time, but cannot rely on rigid time alone (the specific structure of the $|EP\rangle$ item can only be described by Chu's constant quadrupole(s), which characterizes the interactions between superfluid and peripheral structures, as well as the coupling of the two-fluid system to the external environment. The more advanced of the levels, the more quadrupole folding or SLE levels). Approximately six centuries ago, the Wudang further refined this method: the practitioner was first suspended by the neck, then inverted and suspended by the feet, and finally the two modes were integrated through the bridge pose shown in the figure. In essence, all spinal-converging systems share the same objective: to increase the amount of non-simultaneous time that can be stored and regulated by the spine—the largest somatic reservoir of non-simultaneous time.

We can see from here, that non-simultaneous time is trainable, whereas rigid time is not. For example, when the eyes detect a very small signal and induce a large inversion action from the CSF to the body, the inversion relationship between this tiny signal and the somatic action can be strengthened through training or weakened through a forgetting cycle. Thus, the essence of biological **memory** is non-simultaneous time. Computers store static data, which must be activated by an algorithm—and the algorithm itself, is not the stored memory. Biological memory operates in a different way: organisms do not store static data; they store momentum patterns, analogous to algorithms. In the example, what is remembered is not the tiny sensory signal itself, but the relationship between that signal and the large inversion action that follows. The transformation from signal to action is itself the algorithm, and therefore no computation is needed; the spine simply executes it automatically through an entropy-preservation process. Traditional quantum mechanics—although it omits surface tension and incorrectly places everything under energy conservation—can still be used roughly to illustrate what the "content" of memory resembles: namely, entanglement relations between particles. However, conventional physics mistakenly treats entanglement as symmetric, and because it ignores surface-tension effects, it cannot describe folding. In reality, entanglement may be regarded as only a simple, single-layer symmetric memory model. Biological memory, by contrast, integrated with SLE, and therefore is inherently asymmetric, no biological memory exists without such asymmetry. It is also noteworthy that the non-simultaneous time or (asymmetric quantum gravity entangled trainable) biological memory momenta has measurable weight, our previous Cavendish mutation and diverse FHD experiments [1] can all be interpreted as examinations of the actual weight of memory—or, equivalently, non-simultaneous time. In contrast, conventional Newtonian time carries no physical weight. The biological gravitational G shifting observed in these experiments originates from SLE associated with "memory weight". Unlike both Newtonian absolute time and

Einsteinian relativistic time, which are intrinsically weightless, non-simultaneous time stored in biological systems manifests physical weight via ***EP*** irrotationality. Note: Because human brain memory relies on weight-bearing non-simultaneous time and entropy-preservation dynamics, while computers operate on weightless rigid time under energy-conservation principles, brain–machine interfaces face **intrinsic incompatibilities** even at the level of fundamental physical principles.

Now that the essence of memory is non-simultaneous time, any discussion of spinal training must also address practical applications of (non-simultaneous) time devices. In early antiquity, Chinese and Western timekeeping tools were remarkably similar, relying on sundials and clepsydras (water clocks). The earliest Chinese sundials and the instruments used to record the twelve Shichen (時辰, ancient Chinese temporal record symbols) correspond to the temporal regime represented by the kneeling figure in (Fig. 1d②), around 1600 BCE. Likewise, early Western timekeeping — developed in ancient Greece and Rome — was fundamentally solar-based and therefore not substantially different from that of China.

A true divergence emerged around 1300 CE, when Europe entered the mechanical era and produced the first human -made clocks that required neither sunlight nor water flow. From this point onward, Western civilization developed an increasingly abstract, uniform, and rigid notion of time—a conceptual structure that later supported Newtonian mechanics and ultimately shaped all modern global timekeeping systems. China, having undergone neither a Newtonian theoretical shift nor an industrial revolution centered on mechanical clockmaking, continued to rely primarily on solar-based temporal definitions. After the fall of the Qing dynasty (1911), Western timekeeping systems were adopted nationwide. Yet even today, Kungfu lineages such as Wudang and Shaolin still organize their practice schedules according to sunrise–sunset temporal frameworks. This persistence is not accidental. For any spinal converging training, sunrise/sunset timing is indispensable. In this framework, time is not divided into twelve uniform intervals; instead, sunrise, sunset, zenith, and nadir serve as four fixed anchor points, from which all other temporal coordinates are derived. Different kungfu subsets assign specific optimal training windows based on this structure. This enduring practice is not merely a matter of cultural tradition—it reflects the deeper fact that, with or without spinal training, the human body's entropy-preservation nature is intrinsically more compatible with a sunrise/sunset temporal regime than with a rigid Newtonian time. The discrepancy between these two time keeping systems can conditionally attain hours.

Of course, traditional sunrise/sunset timekeeping is not suitable for engineering, transportation, or industrial coordination, etc. However, the two temporal systems need not conflict; rather, they can be intelligently harmonized. For biological processes—especially sleep, waking, and daily work–rest schedule—even a partial return to sunrise–sunset alignment would produce significant global health benefits. In this context, the Western practice of daylight saving time (DST) represents a fundamental misunderstanding. DST modifies clock time for the sake of nominal energy savings, yet it disrupts the human body's entropy-preservation mechanism, which evolved under the invariant constraints of sunrise/sunset for billions of years. Instead of artificially adjusting time—a change that forces temporary biological desynchronization—society would benefit from restoring natural sunrise/sunset alignment for all individuals, irrespective of whether they practice spinal converging training. Such restoration would naturally reduce artificial light usage after sunset and thereby naturally decrease energy consumption—achieving sustainability without imposing an evolutionarily discordant temporal shift. In short, sustainable energy use is best achieved not by manipulating mechanical time, but by allowing human behavior to re-align with the natural non-simultaneous-time structure under which bio-systems evolved, and Renaissance entropy preservation lifestyle. This principle extends beyond human non-simultaneous time structures and applies equally to agricultural systems. Contemporary greenhouse and indoor farming operations increasingly rely on rigid average-temperature control, a practice rooted in Newtonian time assumptions that overlook the daily and seasonal thermal fluctuations intrinsic to biological evolution. Substituting static mean-temperature regulation with sunrise/sunset-synchronized diurnal/seasonal temperature shifting can markedly improve crop quality and productivity. Such modulation should not be regarded as an additional technological burden, but rather as a correction—replacing rigid energy conservation logic with an entropy preserving temporal framework consistent with the conditions under which bio-systems arise, grow, compete, and adapt. **More importantly**, although molecular biology is theoretically formulated almost entirely within a Newtonian rigid-time framework, its most fundamental experimental technique — polymerase chain reaction (PCR)—does not operate under rigid time at all. Under primer guidance, DNA synthesized inside a PCR tube accumulates through repeated thermal fluctuation cycles (typically 30–50 **repetitive cycles** around 95 ℃ denaturation, 60 ℃ annealing, and 72 ℃ extension), a process that inherently represents a non-simultaneous temporal superposition rather than Newtonian clock time. This thermal-fluctuation-driven accumulation of DNA fragments plays a role analogous to sunrise–sunset modulation in biological systems, where irrotational entropy and bio-inertia are regulated by natural non-simultaneous temporal cues. Not coincidentally, many attempts to enforce strictly rigid-time quantification in PCR have encountered systematic limitations and reproducibility barriers. Likewise, rigid human activity schedules that ignore natural sunrise–sunset alignment have produced increasingly visible physiological consequences. These parallels indicate that non-simultaneous time is not an exception in life sciences, but a foundational temporal structure underlying biological growth, regulation, and memory formation.

Finally, we conclude this case by briefly addressing the Five Motions (Wu Xing, 五行) framework, which can be understood as an extension of Chu's constant beyond music into biological and temporal regulation. There are two tones in Western music: major tonality and minor tonality. As the following, in C major, semitone (or Shannon Entropy Loci, $\left|\sqrt[12]{\mathbf{2^{2n-1}}}\right\rangle$, **bold** in the figure,) appears between E–F and B–C, whereas in c minor they appear between D–E and A–B: The structural difference between the major and minor tonality is the **linearity shifting** of their **Shannon Entropy Loci**. In application we can simply say that, **major tonality**

Major :	C	D	**E**	**F**	G	A	**B**	$\dot{C}$
Chu's:	$\left\lvert\sqrt[12]{2^{2-1}}\right\rangle$	$\left\lvert\sqrt[12]{2^{4-1}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{6-1}}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{8-1-1}}}\right\rangle$	$\left\lvert\sqrt[12]{2^{10-2}}\right\rangle$	$\left\lvert\sqrt[12]{2^{12-2}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{14-2}}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{1+12}}}\right\rangle$
BQP	sin/cox 1x	sin/cos3x	**sin/cos5x**	**sin/cos6x**	sin/cos8x	sin/cos10x	**sin/cos12**	**sinx/cos13x**
Shannon Entropy Loci(Major)			5	6	,		12	13

Minor :	C	**D**	**E**	F	G	**A**	**B**	$\dot{C}$
Chu's:	$\left\lvert\sqrt[12]{2^{2-1}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{4-1}}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{6-1-1}}}\right\rangle$	$\left\lvert\sqrt[12]{2^{8-2}}\right\rangle$	$\left\lvert\sqrt[12]{2^{10-2}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{12-2}}}\right\rangle$	$\left\lvert\sqrt[12]{\mathbf{2^{14-2}}}\right\rangle$	$\left\lvert\sqrt[12]{2^{1+12}}\right\rangle$
BQP	sin/cox 1x	**sin/cos3x**	**sin/cos4x**	sin/cos6x	sin/cos8x	**sin/cos10x**	**sin/cos11**	sinx/cos13x
Shannon Entropy (Minor)		3	4			10	11	

Loci. In application we can simply say that, **major tonality aligns with daytime activity**, whereas **minor tonality aligns with nighttime or low-activity states.** A melody describing daytime processes must therefore be accompanied by harmonic structures sharing the same Shannon Entropy Loci. Although modulation between tonalities occurs in some musical compositions—such as when one movement depicts brightness and a subsequent movement depicts darkness —such modulation still must preserve entropy-loci consistency between melody and accompaniment (mixing incompatible entropy structures leads to systemic instability—manifesting as harmonic dissonance in music and, in biological systems, loss of immune robustness, potentially predisposing to physical systematic pathological states such as cancer). The **Five Motions (Wu Xing)** framework can thus be interpreted as a system of **five distinct entropy-tonality states**, rather than only two as in Western music. More importantly, its scope extends far beyond music. Wu Xing addresses how transitions among multiple entropy states can occur without inducing conflicts at the Shannon Entropy Loci level.

From a biological perspective, modern energy conservation - based biology struggles to explain why humans require sleep, as it fails to identify a fundamental metabolic distinction between daytime and nighttime states. Western music theory likewise offers no principled criteria for modulation beyond compositional convention, and twelve - tone equal temperament remains confined to musical applications. In contrast, the Five Motions framework provides a coherent explanation: **daytime and nighttime correspond to distinct entropy-loci configurations and irrotationality**. Sleep represents a necessary transition between these configurations under entropy-preserving constraints. Surrounding this framework, ancient China developed auxiliary systems such as the *I Ching*, which functioned as operational tools for managing entropy-state transitions. Following the collapse of the Qing dynasty in 1911, Chinese society largely abandoned these traditional frameworks in favor of Western mechanical civilization in industry, education, and institutional science. As a result, Five Motions theory became marginalized. Even today, within traditions such as Wudang or Shaolin, only a small number of practitioners retain systematic understanding of these concepts. Nevertheless, their historical marginalization does not diminish their scientific relevance at any degree.

CASE III: Review the inherent weakness of AI from bio-system *SLE*

We first need to clarify the term "AI" as **AI Status Quo tools**, because its essence is not true intelligence but rather a mechanism designed to maintain rigid ***status quo*** of data patterns derived from large models. For instance, **AlphaGo**, when competing with humans in the game of Go, was first trained on a vast dataset composed of human gameplay records—a large model representing past human Go moves [9]. It then performed Monte Carlo searches within this statistical landscape, following the most probable moves derived from the existing model. In doing so, AlphaGo did not actually need to "understand" Go; it merely applied statistical inference to maintain and exploit the structure of existing data—what we call the ***status quo*** of all procured Go moves. When humans compete against such tools, it is difficult to win by following ***status quo*** strategies. As in the right hand of (Fig.1d④), in the 2016 match between **Lee Sedol** and AlphaGo, Lee played a move that existed in AlphaGo's probability distribution with only a **0.007% occurrence**—a vanishingly small statistical weight. AlphaGo could no longer locate a valid counter-strategy and subsequently made several blunders. This marked the first time a human defeated the **AI *Status Quo*** under an unfair competition rules.

This phenomenon is not confined to Go game. In every domain, large-model AI systems remain fundamentally ***status quo* tools**, and recognizing this nature enables us to understand ***SLE*** and use them more effectively. For example, **AlphaFold** is a tool designed to predict protein folding. Its predictions are based on statistical regularities deeply learned from tens of thousands of known protein structures worked out by human laboratories, never means that AI really know protein. If one's goal is to reproduce proteins that conform to the ***status quo*** of known protein structures, AlphaFold is a reliable tool. However, if one aims to **innovate**—to discover a protein structure fundamentally different from the existing ***status quo*** structures or to reveal new biological functions—then one must explore the **low-probability regions** of the model's prediction space, much like how humans defeated AlphaGo with a low-probability move in Go game.

It is also important to note the rules set by Google at the time stipulated that human players could only rely on their own experience of Go game, without the assistance of computers. In reality, if the rules had been changed otherwise, AlphaGo would have been defeated decisively. For instance, by using a computer to get the next ***status quo*** move, a human player could simply work for connecting several **low-probability**

moves rather than competing with AlphaGo for the speed of reproducing high-probability moves. With focus on only a few low-probability moves, a human can easily defeat AlphaGo again—even the algorism power of the aided computer is far inferior to the power of AlphaGo —to support enough high-probability next moves quickly for the human player to work out the lower probability move doesn't need a powerful computer. The mechanism behind this observation is our earlier discussion: **AI builds its status quo through entropy-generating processes**, however, humans may **issue entropy degenerating converging** via ***SLE*** . These converging can disrupt AIs' high-probability ***status quo*** by depriving of the data pattern that they can "parasite". One might argue, "Why not simply train AIs to calculate low-probability moves as well?" The difficulty is that at any given probability level, AIs require sufficient ***status quo*** **samples** to work, because they are just **applied statistical tools**. Before facing human opponents, AlphaGo was trained on 30 million professional human moves and approximately 15 million self-play games [9]. Yet even with such vast deep learning datasets, it still only can collect high-probability move samples. Once a human move with only **0.007%** probability present; even if the present training volume were expanded by 1,000 times, the expected ideal probability would only reach 0.007% × 1000 ≈ 7%, which is still far less than 1 for procure a second lower probability sample, with such an insufficient sample size, no statistical method to derive a valid counter-strategy. The same scenario applies to so-called autonomous driving and all other AI applications. On the road, systems detect huge signals. For high probability presenting signals, AIs can handle them better than humans because they are tireless and much swift. But once a low-probability signal appears, the AI's response is very likely to suddenly become a dangerous driving. This is an inherent flaw that has little to do with the increasing of the power of the AIs incorporated inside. **Regardless of how powerful an AI system is, its low-probability margins inevitably remain**.

From this perspective, we can see that for any AI model, the low-probability regions represent AI (***Status Quo***) tool's inherent weakness—and belong to the birthplace of genuine human innovation. Such innovation arises from our biological ***EP*** **irrotational superfluidity (**Human thought functions as a **probability converging process**, arising from the coupling of a **superfluid** and a **peripheral normal-fluid** structure. Through a trivial ***EP*** **inversion signal**, the superfluid triggers large-scale inversion in the peripheral structures, enabling cognition to advance toward **low-probability, entropy-degenerative** outcomes. In contrast, **AI** operates only along **high-probability, entropy-generative trajectories** due to lacking this two-fluid inversion mechanism. Ultimately, the human brain's ability to generate low-probability decisions still comes from the same evolutionary rules we have previously generalized: **the more evolutionarily advanced a species becomes, the greater the asymmetry that emerges from its central nervous system—and the greater its capacity to degenerate probability itself through inversion)**. We can now readily recognize that **biological evolution is indeed, the evolution of (asymmetric) quantum entanglement**. The emergence and evolution of biological asymmetric entanglement unfold instead across geological time, proceeding far more slowly than any physical process observable in a laboratory. This protracted accumulation of ***EP*** polarity constitutes the fundamental process of life evolution. Given any technological application, AIs can reach high-probability treatments far more rapidly than the human brain through algorithmic processing and their vast deep learning ***status quo*** datasets, such tasks should best be delegated to AIs whenever possible. However, for any low-probability treatment, only the human brain can function effectively by ***CSF*** brain spinal ***SLE***; AI becomes not merely notoriously clumsy but may even trigger catastrophic chain reactions. This situation also poses a very real challenge for future education: education can no longer be understood merely as the transmission of knowledge by human teachers. At every level and at every educational stage, people must learn how to delegate high-probability tasks to AIs (***Status Quo*** teachers) and devote human cognition to improving AIs through our innate bio-evolution–acquired low-probability ***SLE*** treatment converging capacity.

CASE IV: Rare codon linearity shifting (asymmetric quantum) reveals the *SLE* memory quiddity of genetics

Case Background

Modern genetics and molecular biology—despite their technological sophistication—remain conceptually rooted in the Newtonian Axiom, which treats biological systems as if they were governed by rigid, energy-conserving, point-based mechanics. This influence is evident in two pervasive assumptions:

1) that gene sequences are functionally independent of an individual's developmental stage or age, and
2) that gene sequences carry no immunogenic distinction between individuals of the same species or across species when transplanted.

Both assumptions reflect a Newtonian, deterministic view in which DNA is treated as a fixed, context-free information string, unaffected by time, entropy flow, or ***EP***, Yet empirical biology contradicts this view. CRISPR/Cas9—often over-estimated as a gene-editing "magic scissors"—in fact only revealed a natural mechanism of entropy alignment, though the over-price driven patent dispute (Feng Zhang Vs Jennifer Doudna, April 15, 2014) reinforced the misconception that it is primarily a technological invention rather than a window into how biological evolution actually operates. A similar Newtonian bias motivated the historical attempt to classify much of the genome as "junk DNA," collapsing an inherently entropy-preserving biosystem into an energy-conservation framework. Non-coding regions are not evolutionary leftovers; they sustain superfluid and ***SLE***. The enzymes associated with gene modification are merely proximal agents; the deeper governing factor is still ***EP*** irrotationality entropy instead of Newtonian energy symmetry.

To examine this principle quantitatively, we analyzed rare codon linearity versus CDS length across eight species, from bacteria to humans. Despite vast evolutionary separation, all eight species exhibit strong linearity, and each displays high density repetition zones—regions of elevated non-simultaneous time capacity. Although different computational methods yield slightly different boundaries for confined to the brain or the spine; at every level of organization, any linear high-repetition zone functions as a memory reservoir. Thus, within the rare-codon–CDS linear framework, these high-density occurrence regions reflect the active genomic memory.

Case Methods and Results:

All coding sequences (CDS) from the eight species analyzed in this study were downloaded from NCBI RefSeq. For each CDS, its length (in codons) and its rare-codon count were computed using a uniform frequency-based criterion within the 12–24 ‰ occurrence window. No additional filtering or weighting was applied; each CDS contributed one (length, rare-codon count) pair to the dataset. Scatter plots of CDS length versus rare-codon count were generated for each species, and linear regression was performed to obtain Pearson correlation coefficients and slopes. To determine the visually stable linearity region, we examined the density distribution of points along the CDS-length axis and identified the contiguous interval where local point density remained above the dataset mean and residual variance was minimal. These intervals are reported as the "linearity-shifting regions" in Table 3. All species were processed using identical procedures and identical parameter settings. No cross-species normalization was required, as only within-species linearity was evaluated. Output includes Table 2 (summary statistics), Table 3 (linearity regions), and Fig. 2 (combined scatter plots with regression lines for all eight species).

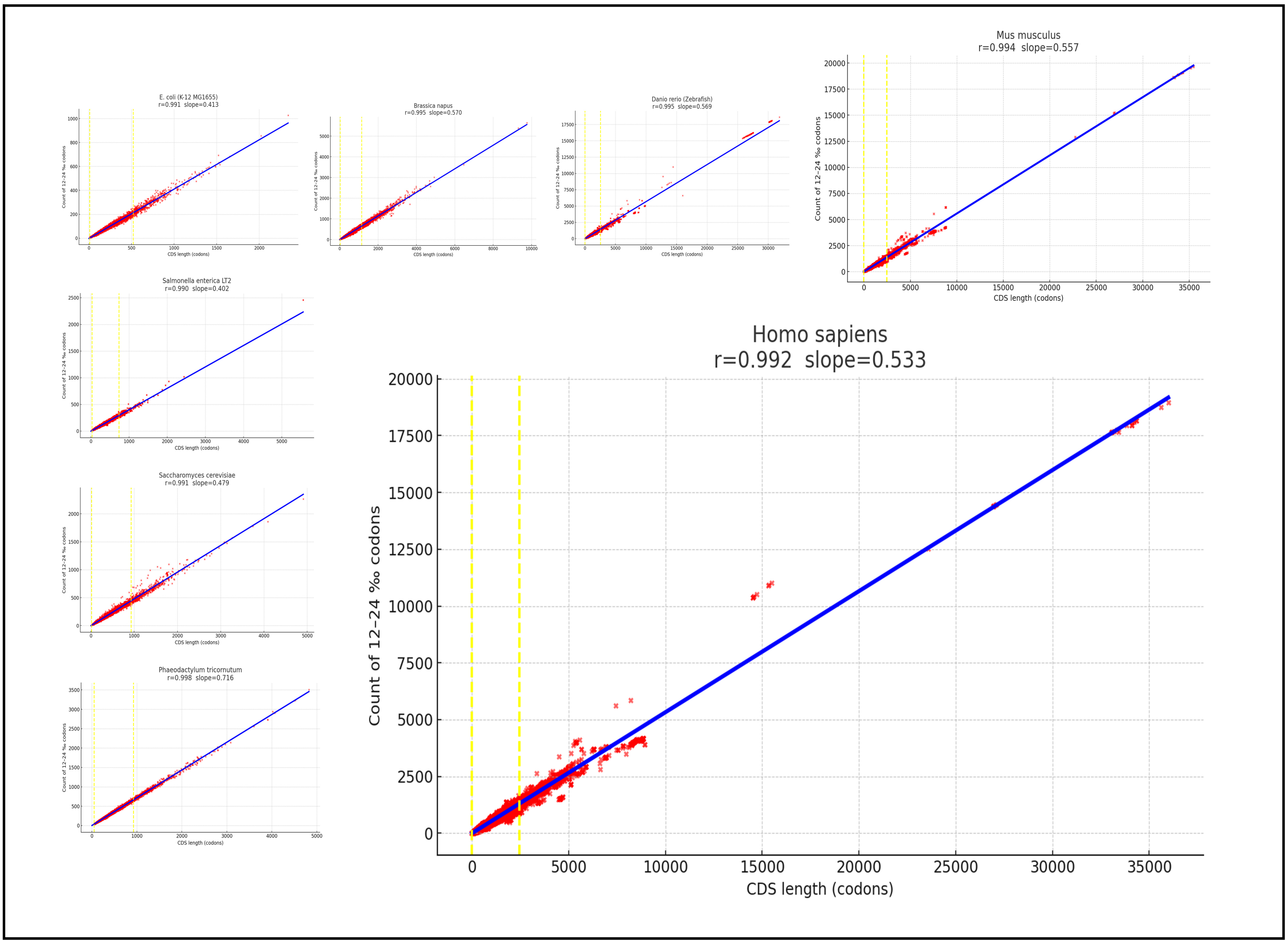

Figure 2: Rare Codon / CDS linearity Shifting Correlation across 8 species from E.coli to Homo Sapien

Table 2. Rare-Codon Linearity Shift with Respect to CDS Length Across Eight Species

Species	Data Source	CDS Count	Total Codons	Rare Codons (12–24‰)	Pearson r	Slope
E. coli	GCF_000005845.2	4,318	1,342,295	23	0.991	0.413
Salmonella enterica	GCF_000006945.2	9,108	2,863,442	23	0.990	0.402
Saccharomyces cerevisiae	GCF_000146045.2	6,008	2,933,521	28	0.991	0.479
Phaeodactylum tricornutum	GCF_000150955.2	10,412	4,845,171	42	0.998	0.716
Brassica napus	Uploaded dataset	96,440	38,258,366	21,528,621	0.995	0.570
Danio rerio	GCF_049306965.1	89,854	~11,200,000	22–23	0.995	0.569
Mus musculus	GCF_000001635.27	98,005	66,614,578	33	0.994	0.557

Mus musculus	GCF_000001635.27	98,005	66,614,578	33	0.994	0.557
Homo sapiens	GCF_000001405.40	146,337	99,625,497	32	0.992	0.533

Note: All species were analyzed using the same rare-codon window (12–24‰) and identical computational workflow. "CDS Count" denotes the number of coding sequences included in the analysis. Because most bacterial and many eukaryotic genes contain a single CDS, this number closely approximates gene count. For species with alternative splicing (e.g., mouse and human), CDS Count represents distinct coding transcripts rather than unique gene loci. Pearson r and slope values quantify the strength and rate of linear scaling between CDS length and rare-codon count.

Table 3. Genomic Linearity High Density Repetitiveness Memory Regions across Eight Species

	Linearity-Density Region	Description	CDS count	CDS count vs. high density length	Total Codons	Total Codons vs. high density length
E. coli	450–2,950	Primary dense band with minimal residual variance.	4,318	r = 0.918 (global)	1,342,295	r = 0.816 (global)
Salmonella enterica	600–3,100	Dense clustering in short–medium CDS.	9,108	r = 0.918	2,863,442	r = 0.816
S. cerevisiae	700–3,500	Stable linear region with well-defined density core.	6,008	r = 0.918	2,933,521	r = 0.816
P. tricornutum	900–4,200	Mid-CDS cluster strongest; short CDS scattered.	10,412	r = 0.918	4,845,171	r = 0.816
Brassica napus	1,000–6,000	Strong density cluster corresponding to robust linearity zone.	96,440	r = 0.918	38,258,366	r = 0.816
Danio rerio	1,000–4,800	Consistent density among intermediate–long CDS.	89,854	r = 0.918	~11,200,000	r = 0.816
Mus musculus	950–5,500	High stability in mid-to-long CDS; short CDS variable.	98,005	r = 0.918	66,614,578	r = 0.816
Homo sapiens	1,200–6,000	Linearity preserved across long CDS; very long CDS sparse.	146,337	r = 0.918	99,625,497	r = 0.816

Note: CDS Count and Total Codons from Table 2 are included here to evaluate their quantitative relationship with the width of each species' linearity-density region. Across all eight species, high-density receptiveness region length shows very strong global correlation with CDS Count (r = 0.918) and strong correlation with Total Codons (r = 0.816). These relationships indicate that genomic memory-zone width expands consistently with biological complexity and gene-network size, supporting the interpretation of rare-codon density bands as non-simultaneous-time (genomic repetitiveness memory) reservoirs preserved across 2.5 billion years of evolution. Moreover, the robustness of these linearity-shifting patterns across geological time strongly suggests that what is transmitted across generations is not a static gene sequence, but a non-simultaneous-time structure — which, in bio- systems, manifests as **repetitiveness memory** originating from irrotational inversion among nucleotides with sufficient SLE thresholds.

Case Discussion

We previously proposed that life originated in a whirlpool [1], a hypothesis that was initially supported mainly by evidence from physics. The present case provides direct biological evidence in support of that framework. Rare codons represent the degenerate subset of codon usage—distinct nucleotide triplets encoding the same amino acid, with low-frequency variants classified as rare. Under conventional genetics and molecular biology, which remain largely embedded within the Newtonian Axiom, rare codons are implicitly assumed to converge toward dominant codon usage over evolutionary time. Similarly, non-coding or so-called "junk DNA" was historically expected either to acquire protein-coding function or expected to be eliminated. However, across the eight species examined in this study—spanning from *E. coli* with 4,318 genes to *Homo sapiens* with 146,337 genes, and covering no less than 2.5 billion years of evolutionary distance—the empirical results contradict this expectation. These species differ profoundly in, genome size, palindromic structure, ecological niche, and evolutionary trajectory etc. Yet all eight exhibit three remarkably consistent features: 1) strong linear scaling between rare-codon count and CDS length; 2) stable high-density repetitiveness regions within that linear framework; and 3) a conserved non-simultaneous-time (genomic repetitiveness memory) pattern persisting across geological time.

Notably, none of the datasets shows the convergence behavior predicted by classical molecular genetics. In other words, although the whirlpool of life has rotated for approximately 2.5 billion years, it has not spiraled toward the outcomes anticipated by the central dogma. Instead, it has preserved a stable linearity-shifting architecture. Our initial selection of the 12–24‰ occurrence window for rare codons was motivated by an exploratory application of Chu's constant. The robustness of the observed linearity indicates that this scaling structure is not accidental, but reflects a deeper organizational principle. Here, we further clarify that principle through the concept of repetitiveness memory. In Case II, we introduced a non-simultaneous-time formulation derived from a simple pendulum model:

$$T_{non-simultaneous\ time\ (in\ ether)} = T_{rigid} + |EP\rangle$$

This expression is not specific to pendulums; it applies generically to periodic systems. In most *in vitro* contexts, Newtonian mechanics suffices and the EP term can be neglected. In *in vivo* systems, however, due to SLE — where a minute local signal can drive a large-scale inversion structure across the system — the $|EP\rangle$ contribution becomes non-negligible. Importantly, unlike rigid time, $|EP\rangle$ does not act continuously on every cycle, nor does it resemble a classical damping term. Instead, its manifestation is quantized: the $|EP\rangle$ contribution emerges only after the rigid periodic motion accumulates beyond a threshold number of cycles (e.g., tens of cycles). This quantized emergence defines non- simultaneous time. Memory, in this framework, is exactly this quantized non-simultaneous time. We therefore refer to it as ***repetitiveness memory***: without sufficient **repetitive cycle** accumulation, memory does not function. With this definition, the role of rare codons becomes clear. Across all eight species—from simple bacteria to humans — the strong linear patterns of rare-codon distribution arise because rare codons act as carriers of genomic repetitiveness memory. The persistence of these linearity relationships over approximately 2.5 billion years demonstrates that for all species, what is transmitted across generations is not a static nucleotide sequence, but non-simultaneous repetitiveness memory grounded in EP irrotational entropy.

It is also noteworthy that the present analysis focuses exclusively on rare codons. In reality, the genomic components capable of being conserved from bacteria to humans as repositories of repetitiveness memory must extend far beyond this subset alone, reflecting the fact that biological evolution operates under entropy preservation rather than Newtonian energy conservation. All genomic modifications *in vivo* are complying with their Shannon Entropy Loci. Now we can further clarify the intrinsic meaning of memory degeneracy through rare codons, which are also known as **degenerate codons**. In this context, degenerate does not imply loss, defect, or degradation; rather, it denotes **sharing**. Degeneracy therefore reflects the existence of **shared representations** instead of rigid one-to-one correspondences. From this perspective, the ubiquity of degeneracy throughout bio-systems becomes evident. What we previously referred to as **entropy degeneration** signifies that entropy increase is no longer rigid or single-valued; instead, **shared states inevitably emerge**. In such systems, entropy cannot be treated as a quantity that is precisely measurable with Newtonian accuracy, because the **Newtonian Axiom** itself postulates operable **single-valued** mappings. Once sharing becomes intrinsic, strict single-value determinism necessarily breaks down. Many highly elastic structures in the human body — such as joint ligaments and connective tissues — can be understood as physical manifestations of **degeneracy - derived elasticity**. When two structural components share a ligament, simply means that **shared** element introduces degeneracy, allowing resilient for them. Aging is therefore corresponds to the gradual damping of this entropy degeneration capability. The largest reservoir of irrotational entropy in the human body is the cerebrospinal fluid (CSF), while ligaments, joints, and connective tissues constitute secondary reservoirs. We should know that **irrotational entropy** itself is a kind of dynamic form of degeneration, and memory can be understood equivalently: when we remember two entities together, what is retained is their shared (degenerate) component, rather than two Newtonian independent representations. This degenerated component, comes from repeated turnover processes, constitutes what we called as **repetitiveness memory**.

CASE V: Plastic (surface tension) pollution comes from interference with the bio-system surface cycling or SLE

Many people mistakenly treat plastic pollution as equivalent to chemical pollution. In reality, the essence of plastic pollution is still a physical surface-tension region disruption. Plastics possess extreme environmental stability; when thin plastic films are discarded into nature (with a high specific surface-area ratio), this stability interferes with normal bio-system surface-tension cycling (spinal-vector ↔ surface tension region). There are two critical distinctions when compared to chemical pollution: 1) most plastics are remarkably inert and rarely generate chemical contamination, and the commonly claimed "microplastic particle contamination" *in vivo* does not exist in the form assumed — tiny particles, even enter into the body, do not disrupt internal surface tension functions (the reason chemical micropollutants pose substantial hazards in an *in vivo* environment is still that they can strongly interfere with conjugated inversion structure(s) via previously mentioned SLE. In contrast, physical plastic micro-particles remain in an inertial state, thus cannot amplify their interference through SLE and will eventually be excreted out). 2) Their impacts to bio-system are in directly proportion to the specific surface area ratio, the higher of the ratio, the more harm will issue.

Therefore, the only effective solution is legislative: require that post-consumer plastic films be converted into solids or granules with density greater than water and reduced specific surface area ratio to a certain limit before discarding. As shown in Table 4, most engineering plastics already have densities higher than water. For those lighter-than-water plastics—primarily PE and PP—simple recycling-stage processing can add something such as ≥25% $CaCO_3$ or other mineral fillers, raising their density above water and also reduce their **specific surface area ratio** will solve problems. The required technology is mature, low-cost, and industrial standard; what remains is still judicial and legislative support. Those who benefit from the convenience of plastic films should pay an environmental protection fee to convert them into sinkable solids with a lower enough **specific surface area ratio**.

In discussions of plastic pollution, the SLE naturally lead to a parallel problem—drug delivery. There are numerous "drug-delivery stories," such as nanoparticles or other carriers are used to transport drugs into tissues that are normally difficult to access, such as across the blood–brain barrier or the placental barrier. However, researchers often overlook a crucial point: even if a drug physically reaches these deep tissues, it will not function as it does *in vitro*. The selective permeability of cell membranes and physiological barriers is universally dependent on irrotationality—for example, only when the system reaches a sufficiently irrotationality can molecules cross these barriers; otherwise, they cannot. Yet after a drug arrives at its target site, its ability to produce biological function still depends on local irrotationality. If the delivered drug cannot be incorporated into the onsite irrotationality of the microenvironment, then it will have no functional effect. What truly matters is not merely transporting the drug to the location, but ensuring that it can participate in the local irrotationality dynamics. This problem is placed here because it parallels the earlier discussion of microplastic pollution. As argued previously, microplastic particles cause very little harm inside the body because they cannot participate in ***SLE*** processes and therefore cannot interfere with the body's peripheral inversion structures. Hence, particle size does not matter. Chemical microparticles, however, behave differently: the smaller they are, the more soluble and the more capable they are of interfering with local inversion structures. The same logic applies to drug delivery. If a delivered nanoparticle lacks ***SLE*** participation, it shares the fate of microplastic particles—it will do nothing. Ultimately, the only decisive functional factor *in vivo* remains irrotationality.

TABLE 4. DENSITY OF COMMON PLASTICS AND THEIR FLOATATION ON WATER SURFACE

Plastic Type	Density (g/cm ^{3})	Relative to Water (1.00)	Needs Added Filler to Sink?	Notes
LDPE (Low-Density Polyethylene)	0.91–0.93	Lighter than water	**Yes**	Common thin films, bags
HDPE (High-Density Polyethylene)	0.94–0.97	Lighter than water	**Yes**	Bottles, containers
PP (Polypropylene)	0.90–0.92	Lighter than water	**Yes**	Film, food packaging
EPS (Expanded Polystyrene)	0.02–0.06	lighter than water	**Yes**	Foam (Styrofoam)
PS (Polystyrene, non-foamed)	1.04–1.06	Heavier than water	No	Naturally sinks
PVC (Polyvinyl Chloride)	1.30–1.45	Heavier than water	No	High density
PET (Polyethylene Terephthalate)	1.34–1.39	Heavier than water	No	Beverage bottles
PA (Nylon / Polyamide)	1.13–1.15	Heavier than water	No	Engineering plastic
PC (Polycarbonate)	1.20	Heavier than water	No	Engineering plastic
POM (Acetal / Polyoxymethylene)	1.41	Heavier than water	No	Engineering plastic
PMMA (Acrylic)	1.17–1.20	Heavier than water	No	Engineering plastic
ABS (Acrylonitrile Butadiene Styrene)	1.03–1.10	Heavier than water	No	Common consumer plastic
TPU (Thermoplastic Polyurethane)	1.10–1.25	Heavier than water	No	Shoes, films

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A kindergarten girl, **Luobing**, from **Dorset Drive Public School**, using a pair of ice-cream clips at the age of six, contributed to the experimental video (**S_Movie 4**) that symbolically defeat of **Galileo, Newton, and Einstein**, filmed at **7-315 Trader Blvd E, Mississauga, ON L4Z 3E4, Canada**. Another six-year-old kindergarten boy, **Luozhou**, from the same school, with foxtail grasses collected from **576 Pleasant View Dr., Lancaster, NY 14086,USA,** contributed to the experimental video (**S_Movie 5**) that symbolically defeat of **Planck, Schrödinger,** and most renowned **biologists**. We do not know whether these kindergarteners will one day become professional scientists—but we do know that it is today, they have defeated our six renowned pioneers by their lovely toys.

Availability of supporting materials

The supplementary files are available for download at ScienceDB: (https://www.scidb.cn/en/anonymous/NmJRclFi), Data CSTR31253.11.sciencedb.33521, Data DOI:10.57760/sciencedb.33521

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Authors' contributions

Y.L. perceived the models, performed all the experiments with data collection help, and wrote the manuscript.

Supplementary supporting materials (https://www.scidb.cn/en/anonymous/NmJRclFi), under the title "***EP irrotational Entropy***", include:

Supplementary Movies Materials:

S_Movie 1. bio quantum path experiment,

S_Movie 2. original Bose–Einstein condensate (BEC) demonstration video (source: www.quantummadesimple.com),

S_Movie 3. Modified bio-system room temperature condensation (BEC similar, Bose–Einstein condensate),

S_Movie 4. the *FHD* of half-filled bottles with different liquids released from 7.04m,

S_Movie 5. ***in vitro*** Entropy Driven foxtail grass motion and ***in vivo*** Fresh Observation recording.

Supplementary Rare Codon linearity shifting Supporting Materials:

ZIP archive containing all rare-codon linearity shifting figures, methods and gene-level CSV datasets for the eight selected species.

Supplementary Historical Archives:

S_Archive 1. Scanned 1989 archival copy of Wudang Taihe Kungfu system

S_Archive 2. Scanned 2008 archival copy of Wudang Taihe Kungfu system

Appendix Movies

Appendix I: Historical Archives and Academic Use Statement and

Appendix II: Layperson Self-training Method & Mechanism

Disclaimer (Archival Materials Only)

The Wudang Taihe archival materials are provided solely for historical and academic reference, with the purpose of documenting the intellectual lineage relevant to this study. They are not intended for instructional or training use. Any training described or implied in these archives historically required strict lineage transmission, long-term conditioning, and supervised environments, and are therefore not suitable for unsupervised replication. Among the big historical zip file, the **only** scientific element for understanding this paper is the **Appendix II**, the quantum gravity **spinal vector** non-simultaneous **asymmetric spin**: $\boxed{\boldsymbol{n_k = n_{k+1} + |EP\rangle}}$, which has been practiced in the ancient integer reverence lineage for over 600 years, and the theoretical part can be traced back to traditional Chinese Medical Classics for over 2000 years.

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