

Figure 3: Represents the graphs of $T(x, y, z, t)$ versus z for different values of t . It is observed that $T(x, y, z, t)$ goes on decreasing from $z=0$ to $z=0.2$ and $T(x, y, z, t)$ is goes on increasing from $z=0.6$. Also $T(x, y, z, t)$ develops compressive stresses from $z = 0.2$ to $z = 0.6$ in the square region for different values of t .

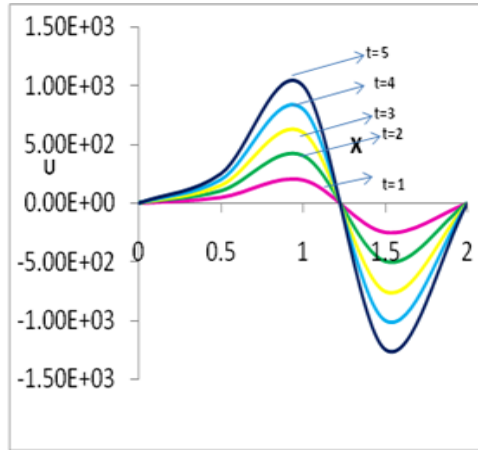


Figure 4: Graph of U versus x for different values of t

Figure 4: Represents the graphs of $U(x, y, z, t)$ versus x for different values of t . It is observed that $U(x, y, z, t)$ develops tensile stress from $x = 0$ to $x = 1.25$ and compressive stresses from $x = 1.25$ to $x = 2$ in the square region for different values of t .

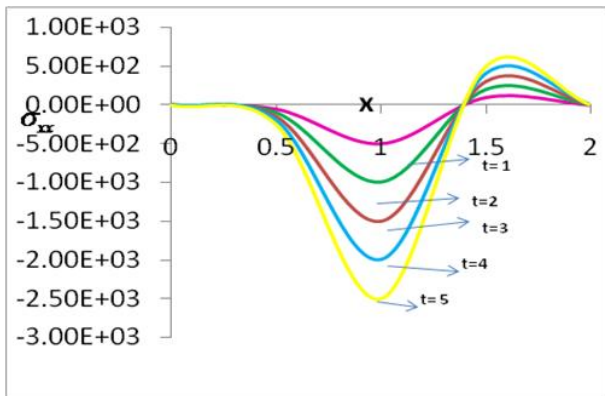


Figure 5: Graph of σ_{xx} versus x for different values of t

Figure 5: Represents the graphs of σ_{xx} versus x for different values of t . It is observed that σ_{xx} is approximately zero from $x = 0$ to $x = 0.5$. Also σ_{xx} develops tensile stress from $x = 1.4$ to $x = 2$ and compressive stresses from $x = 0.5$ to $x = 1.4$ in the square region for different values of t .

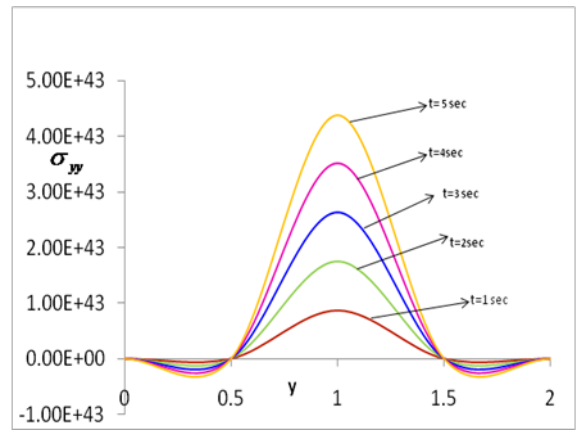


Figure 6: Graph of σ_{yy} versus y for different values of t

Figure 6: Represents the graphs of σ_{yy} versus y for different values of t . It is observed that σ_{yy} is approximately zero from $y = 0$ to $y = 0.5$ & $y = 1.5$ to $y = 2$. Also σ_{yy} develops tensile stress from $y = 0.5$ to $y = 1.52$ in the square region for different values of t .

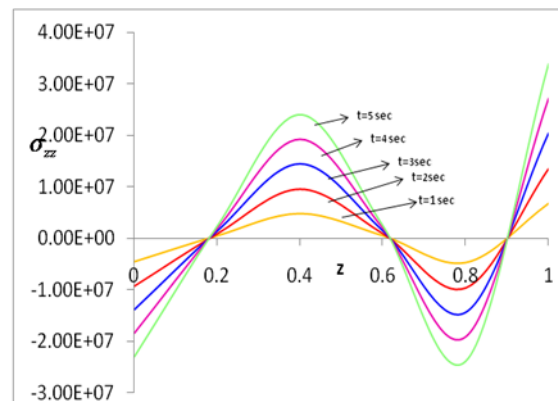


Figure 7: Graph of σ_{zz} versus z for different values of t

Figure 7 : Represents the graphs of σ_{zz} versus z for different values of t . It is observed that σ_{zz} goes on increasing from $z = 0$ to $z = 0.2$ and from $z = 0.9$ to $z = 1$. Also σ_{zz} develops tensile stress from $z = 0.2$ to $z = 0.6$ and compressive stresses from $z = 0.6$ to $z = 0.9$ in the square region for different values of t .

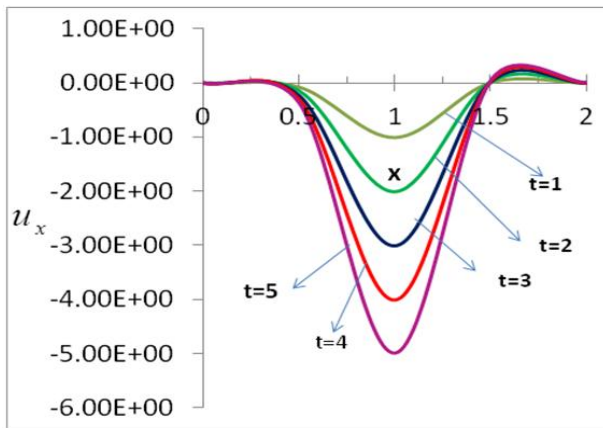


Figure 8: Graph of u_x versus x for different values of t

Figure 8: Represents the graphs of u_x versus x for different values of t . It is observed that u_x is approximately zero from $x = 0$ to $x = 0.5$ and $x = 1.5$ to $x = 2$. Also u_x develops compressive stresses from $x = 0.5$ to $x = 1.5$ in the square region for different values of t .

3. Conclusion

In this study I treated the three dimensional inverse transient thermoelastic problem of square plate with stated boundary conditions. Under these conditions the temperature distribution $T(x, y, z, t)$, unknown temperature $g(x, y, t)$ at $z=h$, The thermoelastic displacement $U(x, y, z, t)$, displacement components u_x, u_y, u_z in X, Y, Z axes respectively and thermal stresses $\sigma_{xx}, \sigma_{yy}, \sigma_{zz}$ have been determined with the help of finite Fourier Sine transform, Fourier Cosine transform and Laplace transform techniques. Any particular case can be derived by assigning suitable values to the parameters and functions in the expressions. I concluded that the system of equations proposed in this study can be adopted to design of useful structures or machines in engineering application in the determination of thermoelastic behavior and illustrated graphically.

4. Acknowledgement

The author is thankful to **Prof. Anand Raipure** for kind help in the preparation of paper.

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