

**ANALYTICAL STUDY OF TRANSIENT THERMOELASTIC
DEFORMATION OF A THICK ANNULAR DISC**

Anjali K. Shinde, Navlekar A. A.*, Kirtiwant P. Ghadle**

Department of Mathematics,
K. T. H. M. College, Nashik, Maharashtra, INDIA

E-mail : anjushinde15@gmail.com

*Department of Mathematics,
Pratisthan Mahavidyalaya Paithan,
Aurangabad, Maharashtra, INDIA

E-mail : drnavlekar@rediffmail.com

**Department of Mathematics,
Dr. B. A. M. University, Aurangabad, Maharashtra, INDIA

(Received: Mar. 15, 2022 Accepted: Jun. 01, 2022 Published: Jun. 30, 2022)

Special Issue

**Proceedings of International Virtual Conference on
“Applied Mathematics and Computation– AMC- 2022”**

Abstract: The manuscript presents an analytical approach to elaborate the thermoelastic behaviour of a thick annular disc subjected to stated boundary conditions. A direct, transient thermoelastic problem is formulated to study the thermal effects on deformation and stresses of a thick annular disc with internal heat generation. The numerical solution is obtained by using Finite Hankel and Marchi Fasulo Integral transform techniques. The obtained results are verified by preparing a mathematical model of annular disc made up of copper plate. The influence of internal heat generation on the temperature, displacements, and components of stresses are visualized graphically.

Keywords and Phrases: Thermal deformation, thick annular disc, Hankel transform, Marchi Fasulo transform.