

Natural Frequency of Thermally Induced Vibration of Tapered Rectangular Plate with Clamped Boundary

Anupam Khanna¹ and Narinder Kaur²

¹Department of Mathematics, DAV College, Sadhaura, Yamunanagar, Haryana

²Department of Mathematics, Maharishi Markandeshwar University-Mullana, Haryana

E-mail: ¹rajeanupam@gmail.com, ²narinder89.kaur@gmail.com

Abstract—A mathematical prediction about the vibration of tapered rectangular plate is presented for the help of researchers, practitioners and mechanical engineers. Here, tapering in plates along with temperature variation is investigated due to their practical utility in machines and structures. Variation in temperature is considered bi-directional. Plate is assumed clamped at the boundary. Rayleigh Ritz method is used to get first two modes of natural frequency at various values of plate's parameters i.e. taper constant, thermal gradient and aspect ratio. Results are shown in the form of tables and graphs.

Keywords: Vibration, clamped, tapered, aspect ratio, frequency.