International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 5 No. I (January, 2011), pp. 77-87

THE ELASTO-PLASTIC PROBLEM OF A CIRCULAR DISK WITH RADIAL VARIATION OF THICKNESS AND DENSITY

A. DE AND D. DEBNATH

Abstract

The purpose of this paper is to investigate the problem of a thin rotating disc with a central circular hole and thicknesses as well as density both are assumed to be varying with the radial distance. The problem has been solved in the elasto-plastic range assuming an arbitrary function for the thickness of the disc and also the same arbitrary function for the density of the disc. The angular velocity for which the disc becomes completely plastic has been computed numerically and has been compared with its values when the disc is uniform in thickness and density.

Key Words : Elasto-plastic, Redial stress, Tangential stress, Elastic region, Plastic region, Angular velocity.

2000 Mathematics Subject Classification: 73C (elasticity).

Ascent Publication House: http:// www.ascent-journals.com