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DETERMINATION OF THERMAL STRESSES IN A CIRCULAR PLATE

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Abstract

Nowacki (1957) has determined steady state. Thermal stresses in a circular plate subjected to an axisymmetric temperature distribution on the upper face with zero temperature on the lower face and the circular edge insulated. Further Roy Choudhuri (1972) has succeeded in determining the quasi-static thermal stresses in a thin circular plate subjected to transient temperature along the circumference of the circle, over the upper face with lower face to zero temperature and the fixed circular edge thermally insulated. This paper deals with the determination of a quasi-static thermal stresses in a thin circular plate keeping temperature of surrounding zero. The plate is subjected to arbitrary temperature on the upper surface with lower surface at zero temperature and the circular edge is insulated. The results are obtained in series form by applying finite integral transform and its inverse. The result is illustrated numerically.

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Key Words : *Thermo-elastic problem, Finite cylinder, Temperature, Thermal stresses.*

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