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Stress Variation around a Circular Hole in Functionally Graded Plate under Bending

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Abstract : The influence of material property variation on stress concentration factor (SCF) due to the presence of a circular hole in a functionally graded material (FGM) plate is studied in this paper. A numerical method based on complex variable theory of elasticity is used to investigate the problem. To achieve the material property, variation plate is decomposed into a number of rings. In this research work, Young's modulus is assumed to be varying exponentially and it is found that stress concentration factor can be reduced by increasing Young's modulus progressively away from the hole.

Keywords : stress concentration, circular hole, FGM plate, bending
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