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Study of Two-Dimensional Elasticity on FGM

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Functionally Graded Materials (FGMs) have been developing as future materials. These materials have a required property of strength or flexibility and the chemical resistance according to actual applications. However, the classical elastic theory is unavailable for FGMs, because the elastic modulus of FGM is not uniform over the body. In the case of uniaxial tension of a rectangular FGM plate, the elastic property of which varies along the tensile direction, the compatibility equation becomes very complicated so that the stress distribution over the plate is hard to resolve analytically. The numerical calculation of the stress distribution is mentioned in the study. By employing the step function for the distribution of elastic modulus, the stress distribution of edge bonded dissimilar materials can be solved. It is mentioned in this paper that reasonable stress distribution is obtained by the suggested method.

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