The Hong Kong Polytechnic University
Department of Applied Mathematics

Seminar
On

Some Analytical Solutions for Elliptical Inhomogeneity Problems for Orthotropic Materials and Engineering Applications

by

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Abstract

Some analytical solutions are presented for elastic fields induced by normal and shear eigenstrains in an elliptical region (inhomogeneity) embedded in orthotropic composite materials (matrix). Based on conformal transformation and complex function method, use of the principle of minimum potential energy leads to exact stress distributions inside the inhomogeneity and in the matrix at the interior boundary, and strain energy for the inhomogeneity/matrix system. The resulting solution can be applied to evaluate volumetric expansion induced cracking and failure of polymers and polymer composites due to freezing of trapped moisture in the elliptical inhomogeneity region as well as fatigue strength of the materials under freeze-thaw conditions.

Date : **Thursday, February 8, 2007**

Time : **4:30 – 5:30 p.m.**

Venue : **Departmental Conference Room HJ610**
The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***