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On elliptic and parabolic problems arising from composite materials

by

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Time: 3:00 – 4:00 pm
Venue: Y4702, Yeung Kin Man Academic Building

ABSTRACT

In the presence of closely located inclusions in elastic composite materials consisting of inclusions and a matrix of different material properties, the stress represented by the gradient of the solution to linear systems of elasticity has discontinuities across the interface separating the subdomains. When the material parameters are finite, I will present the gradient estimate and higher regularity for solutions to equations and systems with piecewise continuous coefficients. When the material parameters go to infinity, the stress always concentrates in the narrow region between inclusions. I will show the blow-up asymptotic expansions of the gradients of solutions to Lamé systems with partially infinite coefficients. Some open problems will be also discussed. This talk is based on joint works with Prof. Hongjie Dong, Prof. Buyang Li, Prof. Haigang Li, and Dr. Yong.lin Li.

~ALL ARE WELCOME~