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Joint COLLOQUIUM OF NUMERICAL ANALYSIS

and GEOMETRIC ANALYSIS

WEDNESDAY 17 DECEMBER 2014 - ROOM ME B331 - 16h15

Prof. Philippe G. CIARLET *(City University of Hong Kong, Hong Kong)* will present a colloquium entitled:

"Direct computation of stresses in elasticity"

Abstract:

We describe and analyze an approach to the pure Neumann problem of three-dimensional linearized elasticity, whose novelty consists in considering the strain tensor field as the sole unknown, instead of the displacement vector field as is customary. This approach leads to a well-posed minimization problem of a new type, constrained by a weak form of the classical Saint Venant compatibility conditions, the justification of which essentially rests on J.L. Lions lemma. Interestingly, this approach also provides a new proof of Korn's inequality.

 We also describe and analyze a natural finite element approximation of this problem, which thus allows to directly approximate the strain tensor field or equivalently, by means of the constitutive equation, the stress tensor field.

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