



De: CRM crm@crm.umontreal.ca
Objet: ***AUJOURD'HUI*** CSMQ-UQAM = Gui-Qiang G. Chen
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COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC - Montréal (UQAM)
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DATE :
Le vendredi 2 décembre 2016 / Friday, December 2, 2016

HEURE / TIME :
16 h / 4:00 p.m.

CONFERENCIER(S) / SPEAKER(S) :
Gui-Qiang G. Chen (University of Oxford)

TITRE / TITLE :
Partial differential equations of mixed elliptic-hyperbolic type in mechanics and geometry

LIEU / PLACE :
UQAM, Pavillon Président-Kennedy, 201, ave du Président-Kennedy, salle PK-5115

RESUME / ABSTRACT :
As is well-known, two of the basic types of linear partial differential equations (PDEs) are hyperbolic PDEs and elliptic PDEs, following the classification for linear PDEs first proposed by Jacques Hadamard in the 1920s; and linear theories of PDEs of these two types have been well established, respectively. On the other hand, many nonlinear PDEs arising in mechanics, geometry, and other areas naturally are of mixed elliptic-hyperbolic type. The solution of some longstanding fundamental problems in these areas greatly requires a deep understanding of such nonlinear PDEs of mixed type. Important examples include shock reflection-diffraction problems in fluid mechanics (the Euler equations) and isometric embedding problems in differential geometry (the Gauss-Codazzi-Ricci equations), among many others. In this talk we will present natural connections of nonlinear PDEs of mixed elliptic-hyperbolic type with these longstanding problems and will then discuss some recent developments in the analysis of these nonlinear PDEs through the examples with emphasis on developing and identifying mathematical approaches, ideas, and techniques for dealing with the mixed-type problems. Further trends, perspectives, and open problems in this direction will also be addressed.

Responsables :
Olivier Collin (UQAM)
Henri Darmon (Université McGill)
Dimitris Koukoulopoulos (Université de Montréal)
Iosif Polterovich (Université de Montréal)
David Stephens (Université McGill)
Hugh Thomas (UQAM)