



De: CRM crm@crm.umontreal.ca
 Objet: ***AUJOURD'HUI*** : CSMQ-Montréal / Philippe G. LeFloch
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 À: activites@CRM.UMontreal.CA

 COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC
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DATE :
 Le vendredi 4 novembre 2016 / Friday, November 4, 2016

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

CONFERENCIER(S) / SPEAKER(S) :
 Philippe G. LeFloch (Université Pierre et Marie Curie, Paris 6)

TITRE / TITLE :
 The nonlinear stability of Minkowski space for self-gravitating massive fields

LIEU / PLACE :
 CRM, Pavillon André-Aisenstadt, 2920 chemin de la tour, salle 6254

RESUME / ABSTRACT :
 I will review results on the global evolution of self-gravitating massive matter in the context of Einstein's theory as well as the $f(R)$ -theory of gravity. In collaboration with Yue Ma (Xian), I have investigated the global existence problem for the Einstein equations coupled with a Klein-Gordon equation describing the evolution of a massive scalar field. Our main theorem establishes the global nonlinear stability of Minkowski spacetime upon small perturbations of the metric and the matter field. Recall that the fully geometric proof by Christodoulou and Klainerman in 1993, as well as the proof in wave gauge by Lindblad and Rodnianski in 2010, both apply to vacuum spacetimes and massless fields only. Our new technique of proof, which we refer to as the Hyperboloidal Foliation Method, does not use Minkowski's scaling field and is based on a foliation of the spacetime by asymptotically hyperboloidal spacelike hypersurfaces, on sharp estimates for wave and Klein-Gordon equations, and on an analysis of the quasi-null hyperboloidal structure (as we call it) of the Einstein equations in wave gauge.

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