SEMPARIS – Séminaires en région parisienne

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TBA

Vendredi 15 Juin 2018, 14 :00
IHES, Amphithéâtre Léon Motchane(Cours de l'IHES)
Domaines : hep-th

Titre : *On the Mathematical Theory of Black Holes (2/4)*

Orateur : **Sergiu Klainerman (Princeton University & IHES)**

Résumé : *The gravitational waves detected by LIGO were produced in the final faze of the inward spiraling of two black holes before they collided to produce a more massive black hole. The experiment is entirely consistent with the so called Final State Conjecture of General Relativity according to which generic solutions of the Einstein vacuum equations can be described, asymptotically, by a finite number of Kerr solutions moving away from each other. Though the conjecture is so very easy to formulate and happens to be validated by both astrophysical observations as well as numerical experiments, it is far beyond our current mathematical understanding. In fact even the far simpler and fundamental question of the stability of one Kerr black hole remains wide open.*

In my lectures I will address the issue of stability as well as other aspects the mathematical theory of black holes such as rigidity of black holes and the problem of collapse. The rigidity conjecture asserts that all stationary solutions the Einstein vacuum equations must be Kerr black holes while the problem of collapse addresses the issue of how black holes form in the first place from regular initial conditions. Recent advances on all these problems were made possible by a remarkable combination of geometric and analytic techniques which I will try to outline in my lectures.