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Seminar of the theory group of APC

Mardi 4 Octobre 2016, 14 :00
APC, 483A Malevitch
Domaines : hep-th

Titre : *Classical & Quantum Black Hole Hair from Goldstone Modes*

Orateur : **Dieter Lust (LMU, Munich)**

Résumé : *Although there is direct experimental evidence for the existence of black holes from the recent measurements of gravitational waves, black holes are still mysterious objects from the theoretical point of view. According to the seminal work of Stephen Hawking, all information about the collapsing matter that forms a black hole is lost during the evaporation of Hawking radiation. This loss of information is in sharp conflict with the rules of quantum mechanics.*

It is also closely related to the no hair theorem of classical black holes, which states a black hole cannot carry any other quantum numbers other than its mass, charge or its angular momentum. Hence it is mandatory to understand in a quantum theory of gravity what are the carriers of information in a black hole and which kind of quantum hair can be attributed to black holes.

In this talk, I will first briefly review how the quantum entropy of black holes emerges in string theory. Furthermore I will also discuss a complementary picture for the hair of neutral Schwarzschild black holes. This part is based on some recent developments related to asymptotic symmetries in gravity and a particular bound state picture of black holes as a Bose-Einstein condensate of gravitons. Finally I give some remarks on black holes as quantum computers.