



JOINT CCQC - CCTP SEMINAR

Thursday, 16 October 2014

14:45-15:45

2nd Floor Seminar Room

Gravity as (gauge theory)²: from amplitudes to black holes

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Abstract

We will discuss the relation between perturbative gauge theory and perturbative gravity, and look at how this relation extends to some exact classical solutions. First, we will review the double copy prescription that takes gauge theory amplitudes into gravity amplitudes, which has been crucial to progress in perturbative studies of supergravity. Then, we will see how the relation between the two theories can be made manifest when we restrict to the self-dual sector, in four dimensions. A key role is played by a kinematic algebraic structure mirroring the colour structure, which can be extended from the self-dual sector to the full theory, in any number of dimensions. Finally, we will see how these ideas can be applied also to some exact classical solutions, namely black holes and plane waves. This leads to a relation of the type Schwarzschild as (Coulomb charge)².

