Institute for Research in Fundamental Sciences
School of Particles and Accelerators

Series of Lectures on
"Modern Methods on Scattering Amplitudes Calculations"

Speaker: Angelo Raffaele Fazio

Physics Department Universidad Nacional de Colombia

First Lecture: **A pedagogical introduction to some of the basic tools used to organize and illuminate the color and kinematic structure of scattering amplitudes in QCD, N=4 Super Yang-Mills, (super) gravity.**

Time: Monday, September 8, 2014 at 15:00

Second Lecture: **The tree level calculations of scattering amplitudes by MHV (maximally helicity violating) blocks and recursion relations will be presented. Applications to massless theories with and without super symmetry, to theories with massive particles and graviton amplitudes in general relativity will be discussed.**

Time: Thursday, September 11, 2014 at 11:00

Third Lecture: **One loop calculations. The generalized unitarity will be reviewed as a mean for obtaining loop amplitudes from on-shell tree level amplitudes. Given the need for regularization at loop level I will present a four-dimensional formulation of the d-dimensional regularized one-loop scattering amplitude and how it works in the framework of generalized unitarily.**

Time: Monday, September 15, 2014 at 15:00

Fourth Lecture: **An introduction to the soft graviton behavior. It will be shown how soft graviton theorems are Ward identity of an extended BMS (Bondi, Burg, Metzener, Sachs) of asymptotically flat space time.**

Time: Thursday, September 18, 2014 at 11:00

Address: School of Particles and Accelerators
Larak Seminar Room