SEMPARIS – Séminaires en région parisienne

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Cours

Vendredi 28 Novembre 2014, 10 :00
IPHT, Salle Claude Itzykson, Bât. 774, Orme des Merisiers
Domaines : hep-th—physics

Titre : *On-shell methods for amplitudes in quantum field theory (3/5)*

Orateur : **David Kosower (IPhT)**

Résumé : *Recent years have seen remarkable advances in our ability to compute on-shell scattering amplitudes in quantum field theories. These basic objects are crucial for providing the theoretical support needed for the experimental program at CERN's Large Hadron Collider. They are also objects worthy of study in their own right, and investigations into them have revealed new and unexpected aspects of gauge and gravity theories.*

The lectures will cover the basics of the developments of recent years : on-shell recursion relations, the unitarity method, and their application to QCD and maximally supersymmetric Yang–Mills theories. The lectures will also cover material related to applications of QCD to collider physics, such as infrared cancellations and subtraction methods.

The lectures will sample some more advanced topics, such as unitarity at higher loops, Bern–Carrasco–Johansson duality, Grassmannians, and twistor strings. What lies ahead in the field of amplitudes is almost certainly as remarkable as what we have discovered already. These lectures are intended to prepare students to embark on their own research in this challenging and exciting area of high-energy physics.