Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 18 Mai 2017, 10:00

John Joseph Carrasco

IPhT Saclay

Generalized Double Copy and N=8 Supergravity at Five Loops

Recent conceptual and technical advances have allowed us to delve further than ever before into the quantum corrections to scattering amplitudes, perhaps nature's most perfect microscopic structures. Doing so we have uncovered surprisingly powerful relations known as the color- kinematic duality, and associated double-copy structure, universal to many theories from the entirely formal to the utterly effective ; applicable to processes from pion scattering to cosmic inflation. Using the color-kinematic duality to construct double-copy amplitudes has tremendous computational advantages, but manifesting the necessary duality can be challenging at higher loops. After a gentle introduction to the ideas and tools at the heart of modern multi-loop integrand construction, I will introduce a new approach that starts from generic gauge-theory integrands, and applies a universal double-copy procedure to obtain gravity integrands that include contact terms generated by any single-copy violations of dual Jacobi identities. I will demonstrate with three-, four- and five-loop examples in maximal supergravity.

Institut Henri Poincaré, salle 314, 3ème étage

Retrouvez les activités de la communauté parisienne de théorie des cordes sur
`http ://string.lpthe.jussieu.fr`
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