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S-Matrix Theory: A Bridge Between Physics and Mathematics

Thursday 16 June 2016 11:00 (30 minutes)

Scattering amplitudes of massless particles have proven to be very interesting mathematical objects. While clearly defined in terms of Feynman diagrams, these seemingly complicated functions of several complex variables become shockingly simple after miraculous cancellations. In this talk I will explain how Riemann surfaces, cluster algebras and the positive Grassmannian are some of the mathematical ideas responsible for this surprising behavior of standard quantum field theory S-matrices.

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Session Classification: R-MEDAL1 CAP Medal Talk - Freddy Cachazo, Perimeter Institute (CAP-CRM Prize in Theoretical and Mathematical Physics Recipient / Récipiendaire Prix ACP-CRM en physique théorique et mathématique)

Track Classification: Herzberg Public, Plenary, and Medal Talks / Conférenciers des sessions Herzberg, plénières et médaillés (CAP-ACP)