Department of Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

Crossing Symmetry in the Planar Limit

(Zoom Seminar)

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Zoom link shall be shared separately

Crossing symmetry asserts that particles are indistinguishable from anti-particles traveling back in time. In quantum field theory, this statement translates to the long-standing conjecture that probabilities for observing the two scenarios in a scattering experiment are described by one and the same function. Why could we expect it to be true? In this talk we examine this question in a simplified setup and take steps towards illuminating a possible physical interpretation of crossing symmetry. To be more concrete, we consider planar scattering amplitudes involving any number of particles with arbitrary spins and masses to all loop orders in perturbation theory. We show that by deformations of the external momenta, one can smoothly interpolate between the future and the past lightcones without encountering any singularities.

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