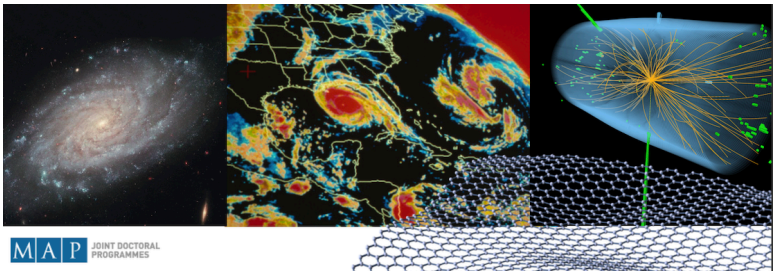

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On the space of U(N) scattering amplitudes

We investigate the space of massive two-dimensional theories with a global U(N) symmetry and no bound states. Following S-matrix bootstrap principles, we establish rigorous bounds on the space of consistent $2 \longrightarrow 2$ scattering amplitudes. The allowed regions exhibit rich geometric features with integrable models appearing at special points along the boundary.
Generic extremal amplitudes display an infinite number of resonances and periodic behavior in energy, similar to previous studies with other group-like symmetries. Within the allowed space, we identify a subregion where the symmetry is enhanced to O(2N), establishing a connection with earlier studies. We also revisit the classification of integrable solutions, identifying one that was previously overlooked in the literature. Finally, we examine the walking behavior of the central charge associated with several of these periodic amplitudes.

Which topic best fits your talk?

High Energy Physics and Cosmology

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