

## Celestial amplitudes: from UV constraints to conformal blocks

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Celestial amplitudes describe scattering in a basis of boost eigenstates. In this basis, 4-point scattering is characterized by two variables: the sum over the boost weights  $\beta$  which is dual to the center of mass energy, and a cross ratio  $z$  related to the bulk scattering angle. In this talk I will describe two aspects of the physics captured by the  $\beta$  and  $z$  dependence. I will first show that the UV behavior of 4-point scattering is encoded in the analytic structure of celestial amplitudes in the complex  $\beta$  plane. The residues of the poles at negative even integer  $\beta$  are related to coefficients of higher-dimension operators in the low-energy effective action hence subject to positivity constraints, while poles at positive even integer  $\beta$  arise from UV asymptotics. I will then show that the  $z$  dependence contains information about the celestial spectrum and three-point couplings. For scalar 4-point scattering mediated by massive exchange, the conformal blocks include massive scalar states with positive integer conformal weights, as well as intermediate exchanges of spinning light-ray states.

**Presenter:** ANA-MARIA, Raclariu