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A Bootstrap bridge between gravity and QCD

Thursday 18 January 2024 10:30 (30 minutes)

The numerical S-matrix Bootstrap aims at establishing non-perturbative universal bounds on physical observables that can be extracted from scattering amplitudes in any dimension. In this talk, I will focus on dimensions greater or equal to four, focusing on two main topics:
no-go theorems for supersymmetric quantum gravity, and Bootstrapping the QCD spectrum using physical glueballs, and pion scattering. These results are obtained by going beyond the simple positivity of scattering amplitude, with the introduction of the non-linear unitarity inequalities. During the discussion, I will describe the Bootstrap methodology and the numerical challenges we face when tackling these problems. I will conclude with a list of possible future directions that I believe are interesting for the development of the field.

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