Quarta 22 Julho 2020, 16.00

https://us02web.zoom.us/j/83163730833

Insights into Scattering from Symmetries and the Infrared

Monica Pate (Harvard)

NB É uma boa continuacao do colóquio da última quinta-feira,

The scattering problem has served as the arena for significant breakthroughs in modern high-energy physics, including the discovery of the Standard Model, and thereby become a pillar of the field. Exhibiting rich mathematical structure while maintaining direct experimental significance, the scattering problem is amenable to a variety of approaches, whose combination has been advantageous historically. While scattering experiments that probe the quantum nature of gravity are beyond our present day capabilities, the theoretical question remains well-posed and a definitive answer would have profound implications for our understanding of the microscopic structure of the universe.

In this talk, I will describe a recently-discovered new class of symmetries of the scattering problem in theories of gauge and gravity. These symmetries are infinite number and as a result imply an infinite number of constraints. The constraints have been identified with the so-called soft theorems from quantum theory which characterize low-energy limits of scattering amplitudes. Finally, I will describe a new proposal for holography of quantum gravity in asymptotically flat spacetimes that was motivated by these new symmetries.