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Mathematical Structures of Scattering Amplitudes

Abstract

Planar  $N=4$  Yang-Mills scattering amplitudes have been computed to very high loop order. They have many remarkable properties, that have sparked interest from mathematicians working on combinatorics, algebraic geometry, and number theory. At the same time, several methods that have been developed for  $N=4$  Yang-Mills are directly applicable to and have greatly aided QCD computations. In my talk I will review some recent developments in  $N=4$  Yang-Mills amplitudes and their mathematical structures.