

Title: Loop Amplitudes from Ambitwistor Strings

Abstract: I will describe recent progress in the study of scattering amplitudes in gauge theory and gravity via ambitwistor strings and the scattering equations, including loop-level contributions. Ambitwistor strings are worldsheet models of quantum field theories, inspired by string theory. They naturally lead to a representation of scattering amplitudes based on the scattering equations. I will describe how the usual loop-level string formalism of higher-genus Riemann surfaces can be avoided for ambitwistor strings, by turning a higher-genus surface into a nodal Riemann sphere, with the nodes representing the loop momenta. This leads to new formulas for loop integrands in gauge theory and gravity, with or without supersymmetry.