

# Holomorphic discs and null geodesics

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This talk will attempt to cover some of Claude’s work on both holomorphic discs and on ambitwistors, spaces of complex null geodesics. The first part will use holomorphic discs in a 2-quadric to give a 1:1 correspondence between asymptotically de Sitter Einstein-Weyl spaces in 3 dimensions and smooth maps from the Riemann sphere to itself modulo Möbius transformations arising from the scattering of null geodesics through the space-time. The second part will describe modern developments in the study of ambitwistors, that is, spaces of complex null geodesics arising from complexifications of (pseudo)-Riemannian manifolds or space-times. In particular Claude showed that the space-time metric is encoded in the complex structure of the ambitwistor spaces and that this correspondence is stable under small deformations. Recent developments use this correspondence to solve for the scattering of gravitational waves.

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