ICTS Seminar

Title : Celestial sphere and unitary representation of the Poincare group

Speaker : Shamik Banerjee, Institute of Physics, Bhubaneswar

Date : Wednesday, September 27, 2017

Time : 3:00 PM

Venue : Nambu Discussion Room(Right), ICTS Campus, Bangalore

Abstract : Recently Strominger and collaborators have shown that one can associate a conformal field theory correlation function with every scattering amplitude in flat space. These correlation functions naturally live on the celestial sphere. Lorentz transformation acts as global conformal group on the sphere and so the transformed scattering amplitudes transform like correlation function of a 2-d Euclidean CFT living on the celestial sphere.

I will show how to construct scattering states, using the representation theory of Poincare group, which naturally live on the celestial sphere. These are not the standard Wigner states. Under Lorentz transformation these states transform like primary operator with "complex scaling dimension". The representation we get is the Unitary principal continuous series representation. This also clarifies , to some extent, the reality properties of the generators of the conformal group, which turns out to be different from the standard reality property. This gives a sort of derivation of the proposal.