

Abstract:

Invented by Roger Penrose in 1971, a spin network is a (directed) graph whose edges are associated with irreducible representations of a compact Lie group, G and vertices are associated with intertwiners of the edge representations adjacent to it. Such objects play an important role in both as a basis for the states of quantum geometry and as a computational tool and its techniques were used to compute the spectrum of area and volume operators. First used as a combinatorial basis for the 3-d space, Spin Networks now find application in quantum gravity, knot theory, and group theory.