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Twisted geometries and spin network states

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Loop quantum gravity is a background-independent approach to the quantization of general relativity. The fundamental states of the theory are described by spin networks, states associated with graphs whose quantum numbers give the spectra of discrete and non-commuting geometric operators. On a fixed graph, the quantum numbers can be interpreted as a collection of fuzzy polyhedra describing a twisted geometry. The maths describing the twisted geometry uses an amusing interplay of symplectic geometry, group theory and Regge geometry which I will describe in some details. There is also a connection to twistors that I will briefly discuss.

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