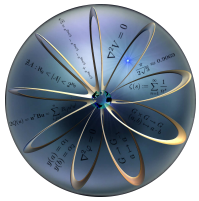

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quantum geometry

Canonical name	QuantumGeometry
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Classification	msc 18D25
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Synonym	Non-Commutative Geometry
Synonym	Non-Abelian Geometry
Synonym	Non-Abelian Topology
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Related topic	NoncommutativeGeometry
Related topic	QuantumGravityTheories
Related topic	QuantumGeometry2
Related topic	OverviewArticleForAlgebraicTopology
Defines	a mathematical approach to quantum gravity based on noncommutative geon

Description: *Quantum geometry (or quantum geometries)* are approaches to Quantum Gravity based on either noncommutative geometry and SUSY (the 'Standard' Model of current Physics) [**?**, **?**] or modified or 'deformed' Riemannian, 'quantum' geometry, with additional assumptions regarding a generalized 'Dirac' operator, the 'spectral triplet' with non-Abelian structures of quantized space-times.

Remarks. Other approaches to Quantum Gravity include: Loop Quantum Gravity (LQG), AQFT approaches, Topological Quantum Field Theory (TQFT)/ Homotopy Quantum Field Theories (HQFT; Tureaev and Porter, 2005), Quantum Theories on a Lattice (QTL), string theories and spin network models.

An interesting, but perhaps limiting approach, involves *'quantum' Riemannian geometry* [**?**] in place of the classical Riemannian manifold that is employed in the well-known, Einstein's classical approach to General Relativity (GR).

References

[1] A. Connes. 1994. *Noncommutative Geometry*. Academic Press: New York and London.

[2] Connes, A. 1985 .Non-commutative differential geometry I–II. *Publication Mathématiques IHES*, **62**, 41–144.

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