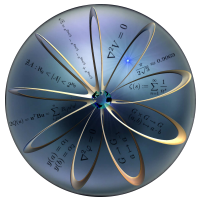

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quantum gravity theories

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0.1 Quantum gravity theories

The goal of several *quantum gravity theories* is to define gravitational interactions in terms of relativistic quantum fields; this poses axiomatic, conceptual, logical and mathematical-fundamental problems and theoretical challenges. In spite of their universal span, gravitational interactions are the weakest known. Repeated experimental attempts failed so far to reliably detect the quanta of gravitational fields- the *gravitons*- which are considered as 'particles' expected to be associated with 'gravitational waves'. Solving the theoretical problem of defining and mathematically treating gravitational interactions in quantum terms is thus the aim of Quantum Gravity theories. Recently, there are several quite different mathematical/theoretical physics approaches that involve either Hamiltonian algebroids or graded 'Lie' algebras/ superalgebras involving extensions of previous relativistic QFT approaches. Two such approaches to Quantum Gravity (and respectively, dark matter) problems are `http://planetmath.org/NoncommutativeGeometry`Noncommutative Geometry which was initially proposed by A. Connes, and (respectively) Quantum Geometry (mostly by theoreticians).

References

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

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