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Graded Geometry and Gravity

Deformations of the algebra of quantum operators lead to a description of fundamental interactions that provides a slightly more general alternative to the usual gauge theory principles. This is quite well established for electromagnetism and useful for the description of magnetic monopoles. We shall show that the same is true for gravitational interactions, but it requires a graded super geometry setting. The construction suggests a novel somewhat more algebraic interpretation of key ingredients of general relativity. Generalized Geometry arises in this context via the derived bracket formalism and leads to an interesting derivation of (super) gravity actions. Time permitting, we will comment on higher spin actions in this graded geometry setting.