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Generalized uncertainty principle, extra dimensions and holography. (English)

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Classical Quantum Gravity 20, No. 18, 3915-3926 (2003).

Summary: We consider uncertainty principles which take into account the role of gravity and the possible existence of extra spatial dimensions. Explicit expressions for such generalized uncertainty principles in $4 + n$ dimensions are given and their holographic properties investigated. In particular, we show that the predicted number of degrees of freedom enclosed in a given spatial volume matches the holographic counting only for one of the available generalizations and without extra dimensions.

MSC:

83C45 Quantization of the gravitational field

83C05 Einstein's equations (general structure, canonical formalism, Cauchy problems)

Cited in **44** Documents

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