LNGS SEMINAR SERIES

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Spin Effects in Non-commutative Quantum Mechanics

A general three-dimensional non-commutative quantum mechanical system mixing spatial and spin degrees of freedom is proposed. In 2+1 dimension we show that this proposal corresponds to a nonstandard non-commutativity induced by shifting canonical coordinates and momenta with generators of a unitary irreducible representation of the Lorentz group. Finally, the analogous of the harmonic oscillator and the Aharonov-Bohm effect will be discussed in this description.

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