

Vacuum Solutions of Classical Gravity on Cyclic Groups from Noncommutative Geometry

DAI Jian and SONG Xing-Chang

Institute of Theoretical Physics, School of Physics, Peking University, Beijing 100871, China
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Abstract: Based on the observation that the moduli of a link variable on a cyclic group modify Connes' distance on this group, we construct several action functionals for this link variable within the framework of noncommutative geometry. After solving the equations of motion, we find that one type of action gives nontrivial vacuum solution for gravity on this cyclic group in a broad range of coupling constants and that such a solution can be expressed with Chebyshev's polynomials.

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Key words: non-unitary link variable, Connes' distance formula, vacuum solution, noncommutative geometry, cyclic group

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