Abstract

Noether’s Symmetries in Quantum Cosmology †

Salvatore Capozziello

Dipartimento di Fisica, Università di Napoli “Federico II”, 80138 Napoli NA, Italy; salvatore.capozziello@unina.it
† Presented at Symmetry 2017—The First International Conference on Symmetry, Barcelona, Spain, 16–18 October 2017.
Published: 1 February 2018

We discuss the Hamiltonian dynamics for cosmologies coming from theories of gravity. In particular, minisuperspace models are taken into account searching for Noether symmetries. The existence of conserved quantities gives selection rules to recover classical behaviors in cosmic evolution according to the so-called Hartle criterion, that allows to select correlated regions in the configuration space of dynamical variables. We show that such a statement works for general classes of Theories of Gravity and is conformally preserved. Furthermore, the presence of Noether symmetries allows a straightforward classification of singularities that represent the points where the symmetry is broken. Examples for nonminimally coupled and higher-order models are discussed.

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