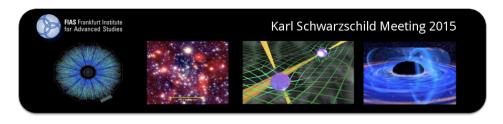
Karl Schwarzschild Meeting 2015



Contribution ID: 28 Type: not specified

Emergent Cosmology, Inflation and Dark Energy from SSB of Scale Invariance

Tuesday 21 July 2015 16:30 (30 minutes)

A new class of gravity-matter models defined in terms of two independent non-Riemannian volume forms (alternative generally covariant integration measure densities) on the space-time manifold are studied in some detail. These models involve an additional R2 (square of the scalar curvature) term as well as scalar matter field potentials of appropriate form so that the pertinent action is invariant under global Weyl-scale symmetry. Scale invariance is spontaneously broken upon integration of the equations of motion for the auxiliary volume-form degrees of freedom. After performing transition to the physical Einstein frame we obtain: (i) An effective potential for the scalar field with two flat regions which allows for a unified description of both early universe inflation as well as of present dark energy epoch; (ii) For a definite parameter range the model possesses a non-singular "emergent universe" solution which describes an initial phase of evolution that precedes the inflationary phase; (iii) For a reasonable choice of the parameters the present model conforms to the Planck Collaboration data.

Author: Prof. GUENDELMAN, Eduardo (Ben Gurion University)

Presenter: Prof. GUENDELMAN, Eduardo (Ben Gurion University)

Session Classification: Senior scientist session 1

Track Classification: Seniors