

LABORATORI NAZIONALI DEL GRAN SASSO

SEMINAR ANNOUNCEMENT

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***Problems and
observational
manifestations of
 $F(R)$ gravity***

Gravity modifications at large scales, suggested for an explanation of the observed accelerated cosmological expansion, are discussed. It is shown that the original early versions of the models suffer from strong instabilities in presence of matter, while suggested later simple modifications lead to large curvature singularities in systems with rising energy density. The singularity can be eliminated by an addition of R -square term and the models become viable. Curvature scalar R in collapsing systems, e.g. at structure formation, oscillates with very high frequency and large amplitude. Such oscillations lead to an efficient particle production and such a process could be a source of high energy cosmic rays.

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