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Accelerating cosmology in modified gravity and neutron stars

Monday 18 September 2017 12:00 (40 minutes)

We give the review of modified gravity as applied to Universe evolution. It is shown that number of modified gravities may provide the consistent unification of the early-time inflation with late-time acceleration. Special attention is paid to $F(R)$ gravity which represents the most developed class of such theories. Specific features of possible evolution in such theories are indicated: singular inflation, bounces, etc. We also show the possible modification of TOV equations for relativistic stars in modified gravities. As a result the mass-radius relation may change qualitatively giving the window for the increase of mass for relativistic stars with small radii.

The results are based on the following works:

1. S. Nojiri and S.D. Odintsov, Unified cosmic history in modified gravity: from $F(R)$ theory to Lorentz non-invariant models. Phys. Rept. 505, 2011, 59, doi:10.1016/j.physrep.2011.04.001, arXiv:1011.0544 [gr-qc].
2. A.V. Astashenok, S. Capozziello and S.D. Odintsov, Extreme neutron stars from Extended Theories of Gravity, JCAP 1501, 2015, no.01, 001, doi:10.1088/1475-7516/2015/01/001, arXiv:1408.3856 [gr-qc].
3. A. V. Astashenok, A. de la Cruz-Dombriz and S.D. Odintsov, The realistic models of relativistic stars in $f(R) = R + \alpha R^2$ gravity, arXiv:1704.08311 [gr-qc].

Type of contribution

Invited talk

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