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Inflation and non-minimal scalar-curvature coupling in gravity and supergravity

Inflationary (slow-roll) dynamics in the gravity theory with a non-minimal scalar-curvature coupling can be equivalent to that in the certain f(R) gravity theory. We briefly review that correspondence and extend it to N=1 supergravity. The nonminimal coupling in supergravity is rewritten in terms of the standard (minimal) N=1 matter-coupled supergravity, by using their manifestly supersymmetric formulations in curved superspace. The equivalence relation between the supergravity with the nonminimal scalar-curvature coupling and the F(R) supergravity (ie. the N=1 locally

supersymmetric extension of f(R) gravity) during the slow-roll inflation is established in the manifestly supersymmetric way (via curved superspace).

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