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Gravitational baryogenesis: problems and possible resolution

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We have shown that the mechanism of gravitational baryogenesis leads to a strong instability of the curvature scalar, resulting in its boundless exponential rise. This instability appears because the coupling of the curvature to baryonic current leads to the fourth order differential equation of motion for the curvature scalar, instead of the algebraic one in the conventional General Relativity. However, the modification of gravity due to a non-linear curvature dependent term in the classical Hilbert-Einstein action allows to stabilize this rise.

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