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## **Compact extra dimensions as the source of primordial black holes**

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We demonstrate the possibility of purely gravitational production of primordial black holes in multidimensional  $f(R)$ -gravity. Our model is based on a compact extra space whose size is stabilized by quadratic corrections to the Ricci scalar in multidimensional Lagrangian. Such a Lagrangian gives rise to a low-energy model containing an effective scalar field capable for the domain walls production. Formed during inflation, these domain walls are dense enough so they collapse into primordial black holes soon after inflation ends. The proposed mechanism for the formation of primordial black holes does not require any matter fields.

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