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Cosmological Constant from Decoherence

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We address the issue why a cosmological constant (dark energy) possesses a small positive value instead of being zero. Motivated by the cosmic landscape picture, we mimic the dark energy by a scalar field with potential wells and show that other degrees of freedom interacting with it can localize this field by decoherence in one of the wells. Dark energy can then acquire a small positive value. We also show that the additional degrees of freedom enhance the tunneling rate between the wells. The consideration is performed in detail for the case of two wells and then extended to a large number of wells.

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