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Vacuum fluxes from a brane in de Sitter spacetime with compact dimensions

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We investigate the vacuum expectation value of the energy flux density for a complex scalar field in de Sitter spacetime with an arbitrary number of toroidally compact spatial dimension and in the presence of a brane. Quasiperiodicity conditions with arbitrary phases are imposed along compact dimensions and on the brane the field obeys Robin boundary condition. Depending on the values of the parameters in the problem, the flux can be directed from the brane or to the brane. The behavior of the flux density in various asymptotic regions is investigated. It has been shown that the energy flux density is an even periodic function of magnetic fluxes enclosed by compact dimensions with the period equal to flux quantum.

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