Effect of Low-Frequency Modulation on Thermal Convection Instability

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The stability of a horizontal layer of fluid heated from below is examined when, in addition to a steady temperature difference between the horizontal walls of the layer a time-dependent low-frequency perturbation is applied to the wall temperatures. An asymptotic solution is obtained which describes the behaviour of infinitesimal disturbances to this configuration. Possible stability criteria are analyzed and the results are compared with the known experimental as well as numerical results.