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Thermal Buoyancy Convection in Systems with Deformable Interfaces

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Thermal convection in a two-layer system with deformable interface heated from below is studied. Generalized Boussinesq approximation allowing correct accounting for the interface deformations in the case of fluids with close densities is used. In the framework of linear stability theory long wave and cellular perturbations are studied, parameter ranges where different perturbations are most dangerous are found. Non-linear amplitude equation describing long wave perturbations with large amplitude is obtained and analyzed. Numerical investigation of developed regimes of convec-tion is performed by the Level Set method. The situations are discovered when the development of instability results in the splitting of one of the layer into the drops.

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