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Vibration impact on longwave thermocapillary instability in a binary mixture with the Soret effect IRINA FAYZRAKHMANOVA, Technion - Israel Institute of Technology, Haifa, Israel, SERGEY SHKLYAEV, Perm State University, Perm, Russia, ALEXANDER A. NEPOMNYASHCHY, Technion - Israel Institute of Technology, Haifa, Israel — We study the influence of vibrations on the longwave Marangoni convection in a layer of a binary mixture with the Soret effect. At the lower solid boundary of the layer a fixed heat flux is specified; the upper free boundary is assumed to be nondeformable. In the absence of vibrations, this problem was analyzed in [1]. The vibration frequency is comparable with the eigenfrequency of the oscillatory mode; its amplitude is sufficiently large to provide finite values of the inertia force. A linear stability analysis is performed by means of the Floquet theory. Several limiting cases are treated analytically. In the parameters region, where an oscillatory instability exists in the absence of the vibration [1], a subharmonic mode is critical. With the increase in the vibration amplitude, substantial decrease in the critical Marangoni number is observed. In the parameters region, where a monotonic mode is found in [1], a synchronous mode emerges. In the latter case, either stabilization or destabilization of the system can take place depending on the problem parameters. [1] A. Oron, A.A. Nepomnyashchy, PRE **69**, 016313 (2004). We acknowledge the support by Israel Science Foundation (grant 812/06) and Israeli Ministry of Science (grant 3-5799).

Irina Fayzrakhmanova
Technion - Israel Institute of Technology, Haifa, Israel

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