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**Numerical evidence for formation of "resonant" coherent structures by an ensemble of small rigid particles in thermocapillary flows** DENIS MELNIKOV, DMITRI PUSHKIN, VALENTINA SHEVTSOVA, Microgravity Research Center, Free University of Brussels (ULB) — The effect of formation of coherent particulate accumulation structures (PAS) in a thermocapillary flow was discovered more than a decade ago. It happens in regimes of the flow that are characterized by a hydrothermal wave travelling in the azimuthal direction. Those structures are dynamic and rotate azimuthally together with the travelling wave. They are appearing as a result of ubiquitous in nature nonlinear phenomenon of phase locking, when the turnover particle motion is synchronized with the rotating wave. Synchronization of the particles with the wave most commonly ends up in resonance leading to the PAS mode coinciding with that of the wave. Other resonance modes of PAS, however, may occur at the same time. We present numerical evidence for such structures.

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