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Diffusive or convective regime: role of vibrations in Space experiments VALENTINA SHEVTSOVA, MRC, University of Brussels — Despite the dramatic decrease of gravity level in spacecrafts, diffusive transport in liquid phase can be significantly perturbed by convection. Although it is recognized that on-board g-jitters may have a major impact on diffusion and thermal diffusion measurements, very few experiments have been carried out in the past. There is a lack of experimental data to validate numerous numerical studies. In the frame of ESA program the experiment SODI / IVIDIL (Influence of Vibration on Diffusion in Liquids) will be performed in September-October 2009 on ISS. Purpose of the project is to measure thermal and isothermal diffusion coefficients in binary systems subjected to controlled vibrations under different values of amplitude and frequency. The measurements will be repeated at wide range of amplitudes and frequency in order to validate the results. The IVIDIL experiment will be performed in two cell arrays each composed of two cells: the primary cell that is probed by MZI and the companion cell that is filled with tracer particles and is probed by digital holography for PIV. Different cell arrays are filled with various liquids. Over the experiment run, the cells are temperature controlled. IVIDIL science team foresees to present first experimental results.

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