Abstract Submitted
for the DFD09 Meeting of
The American Physical Society

**Experimental and Numerical Investigation of Convective Dominated Capillary Channel Flow in Microgravity**[1] JOERG KLATTE, MICHAEL DREYER, ZARM - Center of Applied Space Technology and Microgravity — In this work we investigated experimentally and numerically liquid flows through open capillary channels under microgravity conditions. The experimental investigations focus on the free surface contour and the maximum flow rate through the channel. Due to convective and viscous momentum transport the pressure along the flow path of the liquid decreases and causes the collapse of the free surface. This stability limit depends on the geometry of the channel and the properties of the liquid. We present an experimental setup which is used in the low gravity environment of the Bremen Drop Tower. High-Resolution Experiments with convective dominated systems have been performed where the flow rate was increased up to the maximum value. In comparison to this we present unique three-dimensional computations to determine important characteristics of the flow, such as the free surface shape and the limiting flow rate. The good agreement validates the capabilities of the numerical solver.

[1]The support for this research by the German Federal Ministry of Education and Research (BMBF) through the German Aerospace Center (DLR) under grant number 50WM0535/845 is gratefully acknowledged.

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Date submitted: 05 Aug 2009 Electronic form version 1.4