Abstract Submitted for the DFD11 Meeting of The American Physical Society

Experiments on the Mode Selection in Faraday Instability¹ WILLIAM BATSON, Univ Florida, USA, FARZAM ZOUESHTIAGH, IEMN, Univ. Lille, France, RANGA NARAYANAN, Univ Florida, USA, UNIV FLORIDA, USA TEAM, IEMN, UNIV. LILLE, FRANCE TEAM — The resonance of a fluid interface with an oscillating acceleration field is studied for liquid-liquid systems in small aspect ratio cylindrical and rectangular containers. The resonant phenomenon, known as Faraday waves, is more typically studied in large aspect ratio systems at high frequencies where multiple modes are excited simultaneously and the associated nonlinear interactions give way to a variety of patterns. In this work the low excitation frequency allows for the selection of individual cell modes and their dynamics are considered. The onset threshold for instability is compared to the predictions of this model. It is seen for the cell modes that frequency bands are well predicted by the model and the amplitudes are very close, with deviation attributable to interfacial pinning and sidewall stresses. Supercritical and subcritical bifurctions are observed, along with other nonlinear phenomena such as co-dimension2 points and wave breaking.

¹Support from NSF OISE 0968313, Partner Univ. Fund and a Chateaubriand Fellowship is acknowledged.

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Date submitted: 01 Aug 2011

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