Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Exotic patterns in Faraday waves LAURETTE TUCKERMAN, PMMH-CNRS-ESPCI-Sorbonne, RAHUL AGRAWAL, IIT Bombay, ALI-HIGO EBO-ADOU, Centre d'Etudes et de Recherche de Djibouti, LYES KAHOUADJI, Imperial College London, JUAN MARIN, NICOLAS PERINET, Universidad de Santiago de Chile, JALEL CHERGUI, DAMIR JURIC, LIMSI-CNRS, SEUNG-WON SHIN, Hongik University — For the Faraday instability, by which standing waves appear on the free surface of a vertically vibrated fluid layer, the wavelength is controlled by the forcing frequency rather than by the fluid depth, making it easy to destabilize multiple wavelengths everywhere simultaneously. In the 1990s, this technique was used to produce fascinating new phenomena such as quasipatterns by Edwards & Fauve and superlattices by Gollub, Pier & Kudrolli. This in turn sparked a renaissance of interest in Faraday waves, leading to new mathematical theories and numerical simulations. We will discuss some of the exotic patterns found in recent numerical simulations, such as quasi-hexagons alternating with beaded stripes, a supersquare divided into four subsquares with synchronized diagonal blocks, Platonic solids alternating with their duals while drifting, and a twisted sheared secondary instability of square waves.

Laurette Tuckerman
PMMH-CNRS-ESPCI-Sorbonne

Date submitted: 23 Jul 2019 Electronic form version 1.4