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Pattern formation in oscillatory fluid flows DAPHNE KLOTSKA, University of Michigan, MICHAEL SWIFT, University of Nottingham — Rigid spherical particles in oscillating fluid flows form interesting structures as a result of fluid mediated interactions. Here we show that two spheres under horizontal vibration align themselves at right angles to the oscillation and sit with a gap between them, which scales in a non-classical way with the boundary layer thickness. The details of this behavior have been investigated through experiments and simulations. We then look at a collection of spherical particles, which form chains perpendicular to the direction of oscillation. Comparing experiments and simulations we study the stages of evolution from a dispersed initial configuration to an ordered chain structure. We investigate the details of the interactions and find that the nonlinear hydrodynamic effect of steady streaming is the driving force.

Prefer Oral Session
 Prefer Poster Session

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