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Faraday-waves contact-line shear gradient induces streaming flow and tracers' self-organization: from rotating rings to spiral galaxy-like patterns[1] PABLO GUTIÉRREZ, HÉCTOR ALARCÓN, Universidad de O'Higgins, NICOLÁS MUJICA, NICOLAS PÉRINET, Universidad de Chile, MATíAS HERRERA, LEONARDO GORDILLO, Universidad de Santiago — We experimentally demonstrate self-organization of small tracers under the action of longitudinal Faraday waves in a narrow container. We observe a steady current formation dividing the interface in small cells given by the symmetries of the Faraday wave. These streaming currents are rotating in each cell and their circulation increases with wave amplitude. This streaming flow drives the tracers to form patterns, whose shapes depend on the Faraday wave's amplitude: from low to high amplitudes we find dispersed tracers, a narrow rotating ring and a spiral galaxy-like pattern. We first describe the main pattern features, and characterize the wave and tracers' motion. We then show experimentally that the main source of the streaming flow comes from the time and spatial dependent shear at the wall contact line, created by the Faraday wave itself. We end by presenting a 2D model that considers the minimal ingredients present in the Faraday experiment, namely the stationary circulation, the stretching component due to the oscillatory wave and a steady converging field, which combined produce the observed selforganized patterns.

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