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Traveling-wave electrophoresis for microfluidic separations¹

BOYD EDWARDS, West Virginia University, AARON TIMPERMAN, LLOYD CARROLL, KYOO JO, JON MEASE, JARROD SCHIFFBAUER — Models and microfluidic experiments are presented of an electrophoretic separation technique in which charged particles whose mobilities exceed a tunable threshold are trapped between the crests of a longitudinal electric wave traveling through a stationary viscous fluid. The wave is created by applying periodic potentials to electrode arrays above and below a microchannel. Predicted average velocities agree with experiments and feature chaotic attractors for intermediate mobilities.

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