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Inertial Focusing in High-Frequency Pulsatile Flows GIRIDAR VISHWANATHAN, GABRIEL JUAREZ, University of Illinois at Urbana-Champaign — Inertial focusing in microfluidic channels using oscillatory flows enable the manipulation of particles with considerably smaller particle Reynolds numbers as compared to steady unidirectional flow. We experimentally examine how this focusing performance varies with oscillation frequency by realizing pulsatile flows in a novel two-dimensional microchannel geometry. The particle focusing position, migration velocity, and focusing efficiency are found to depend on oscillation frequency, particle size, and steady transport velocity. A complementary asymptotic analysis was completed for comparison with experimental measurements, and an agreement to good accuracy is observed.

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