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Resonant mixing between two counter-rotating cylinders DMITRI VAINCHTEIN, Drexel University — We investigated the role of resonance phenomena in mixing in Stokes flow between two counter-rotating cylinders with parallel but offset axes. When the cylinders are rotating with constant angular velocities, the mixing is absent. However, when one of the angular velocities is changed periodically, mixing appears. We show that mixing is localized near the streamlines where the period of motion along the unperturbed streamline matches the period of modulation. We discuss the width of the mixing domain in terms of the evolution of the streamfunction that plays to role of the adiabatic invariant of the system

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