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Scaling arguments for flows induced by oscillating cylinders TEJASWIN PARTHASARATHY, MATTIA GAZZOLA, Univ of Illinois - Urbana — Low and high intensity cylinder oscillations in fluids give rise, respectively, to viscous streaming and Keulegan-Carpenter flows, both well understood. These flow systems have been traditionally characterized via different non-dimensional parameters (Re-Rs for streaming flows and KC-β for the KC flows). Nevertheless, the identical system setups suggest that it might be possible to characterize both flow behaviors through a common set of scaling groups based on fundamental principles. We explore this possibility in an attempt to harmonize these two descriptions by means of physical arguments involving time and length scale separation, and guided by direct numerical simulations.

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