Unsteady low-Re swimming ON SHUN PAK, ERIC LAUGA, University of California San Diego — In this talk, we focus on unsteady effects relevant to the fluid-based locomotion of micro-organisms. First, we consider transient effects in locomotion arising from the inertia of both the swimmer and the surrounding fluid. We discuss and derive the relevant time scales governing transient effects in low Reynolds number swimming, and illustrate them using the prototypical problem of a 2D swimmer starting from rest. Second, we address geometrical unsteadiness resulting from the finite-size of the swimmer. We solve numerically for the swimming kinematics of active (internally-forced) filaments, as models for eukaryotic flagella, and discuss the resulting unsteadiness of the cell body.

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