

Abstract Submitted
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From salps to robots: estimating thrust in propulsive pulsed jets using wake kinematics¹ ATHANASIOS ATHANASSIADIS, DOUGLAS HART, Massachusetts Inst of Tech-MIT — Both animals and robots can achieve high maneuverability underwater by using pulsed jets for propulsion. However, in cases where multiple jets are required, it remains unclear how jet placement and timing will affect propulsive performance. In recent experiments,² we demonstrate how vortex interactions reduce thrust production for simultaneously pulsed jets. Our results rely on force estimates using high-speed laser fluorescence imaging of the jet wakes. By combining measurements of wake kinematics with analytical models, we are able to estimate force production from just the fluorescence videos. In this talk, I will discuss the force estimation technique, and how this approach helped to reveal design strategies that would *benefit* from the wake interactions.

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²A.G. Athanassiadis, and D.P Hart. Phys. Rev. Fluids, 1(3), 034501. (2016).

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