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Simulations of micro-swimmer scattering by soft elastic filaments¹ RODRIGO LEDESMA-AGUILAR, JULIA M. YEOMANS, Rudolf Peierls Centre for Theoretical Physics — The locomotion of microorganisms in the presence of elastic filaments, such as hairs and flagella, is very common in biological systems. We perform a theoretical study, using a simple point-force hydrodynamic model, to analyse the scattering of a dipolar swimmer and semiflexible filaments. Our swimmers consist of active dumbbells that undergo a non-reciprocal swimming stroke leading to locomotion. Fluid-mediated interactions with the elastic chains are modelled using Oseen-level hydrodynamics. We explore the effect of the elasticity of the filaments on the swimmer velocity and orientation.

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