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An active particle in a complex fluid CHARU DATT, GIOVANNI ANTONIO NATALE, SAVVAS G. HATZIKIRIAKOS, GWYNN J. ELFRING, University of British Columbia, Vancouver — Active particles are self-driven units capable of converting stored or ambient free-energy into systematic movement. We discuss here the case when such particles move through non-Newtonian fluids. Neglecting inertial forces, we employ the reciprocal theorem to calculate the propulsion velocity of a single swimmer in a weakly non-Newtonian fluid with background flow. We also derive a general expression for the velocity of an active particle modelled as a squirmer in a second-order fluid. We then discuss how active colloids are affected by the medium rheology, namely viscoelasticity and shear-thinning.

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