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Microswimming with odd elasticity

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We theoretically examine self-oscillating waves of an active material with odd elasticity, which was recently introduced as a non-symmetric part of an elastic matrix. In this study, after a brief introduction to a kinematic problem of microswimming, we discuss fluid-structure coupling in swimming dynamics. To understand the universal properties of the elastohydrodynamic interaction that generates the swimming, we consider a general elastic material under a noisy shape gait in the Stokes flow and derive its swimming formula. As a prototypical example, we investigate the Purcell three-link swimmer with odd elastic hinges and numerically demonstrate that an odd elastic filament at low Reynolds number can swim in a self-organised manner.