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Generalised geometric swimming for Stokes flow LYNDON KOENS, Macquarie University, ERIC LAUGA, University of Cambridge — Shapere and Wilczek first demonstrated that the displacement of a microscopic swimmer was related to path integrals over a gauge field. This field is a function of the swimmers configuration and laboratory frame position. For simple 1D swimmers, Stokes theorem can be used to relate the net displacement from a stroke to the area within a curve. This provides an effective method to determine the optimal strokes for displacement. However, a similar visualization is difficult for many swimmers because of complex configuration spaces or non-commuting variables. In this talk I will use a Purcell swimmer to demonstrate how to overcome these issues. These techniques reveal general properties about the displacement of microswimmers while offering a new method to optimise them.

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