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Patchy Vesicles Tremble Before a Flow[1] PRERNA GERA, University of Wisconsin-Madison, DAVID SALAC, University at Buffalo, The State University of New York, SAVERIO SPAGNOLIE, University of Wisconsin-Madison — Biological membranes, and recently engineered synthetic vesicles, may be host to numerous components which provide spatially varying material properties such as spontaneous curvature and bending rigidity. We will discuss the dynamics of a two-dimensional vesicle with such spatially varying material properties in a shear flow. Using small amplitude asymptotics and full numerical simulations, we pay special attention to the role of variable bending stiffness. Reduced-order models are derived and used to accurately predict phenomena ranging from low wavenumber breathing modes to highly oscillatory trembling modes.

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