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Three-Dimensional Hydrodynamics of Multicomponent Vesicles[1]
PRERNA GERA, DAVID SALAC, University at Buffalo — The cholesterol present in lipid membranes combine with the saturated lipids to form energetically stable domains that are surrounded by unsaturated lipids on the surface of a vesicle. In experimental studies, these domains have exhibit interesting and exotic patterns. A three dimensional continuum model is used in this work to replicate, understand, and explore the dynamics of a multicomponent vesicle. The multicomponent membrane is modeled using a two phase surface Cahn-Hilliard equation along with a combined level set/closest point method. The domains on the membrane is coupled with the fluid surrounding the vesicle via an energy variation approach. Using this coupled model the sample results will be presented and comparison with experimental work will be done.

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