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Qiang Du* (qdu@math.psu.edu). *Phase field modeling and simulations of vesicle membranes.*

We discuss diffuse interface (phase field) models of both single-component and multi-component vesicle membranes. We also consider models for the interactions of vesicles with an adhesive substrate, and those with a background fluid as well as those involving fluctuation effects. We present the mathematical derivations and compare results of numerical simulations with experimental findings. (Received March 24, 2010)