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Gurgen Hayrapetyan* (ghayrap@andrew.cmu.edu) and **Keith Promislow**. *Spectra of Functionalized Operators Arising from Hypersurfaces.*

Functionalized energies, such as the Functionalized Cahn-Hilliard, model phase separation in amphiphilic systems, in which interface production is limited by competition for surfactant phase, which wets the interface. This is in contrast to classical phase-separating energies, such as the Cahn-Hilliard, in which interfacial area is energetically penalized. In binary amphiphilic mixtures, interfaces are characterized not by single-layers, which separate domains of phase A from those of phase B via a heteroclinic connection, but by bilayers, which divide the domain of the dominant phase, A, via thin layers of phase B formed by homoclinic connections. Evaluating the second variation of the Functionalized energy at a bilayer interface yields a functionalized operator. We characterize the center-unstable spectra of functionalized operators and obtain resolvent estimates to the operators associated with gradient flows of the Functionalized energies. This is an essential step to a rigorous reduction to a sharp-interface limit. (Received September 17, 2013)