1127-35-56 **Keith Promislow*** (kpromisl@math.msu.edu), Department of Mathematics, C212 Wells Hall, East Lansing, MI 48824, and **Qiliang Wu** (qwu@math.msu.edu), Department of Mathematics, East Lansing, MI 48824. *Competitive evolution of multicomponent amphiphilic bilayer networks.*

Many biological applications, in particular the endoplasmic reticulum, are comprised of a collections of amphiphilic lipids that encode distinct morphological preferences. We present a fourth order free energy whose mass-preserving gradient flows engender a center-stable reduction that couples geometric flow of the underlying membrane shape to phase separation of lipid types upon the surface of the membrane. We discuss applications to physical systems, and present an analysis of a minimal model that high-lights the complexity of the underlying dynamics, including a possible infinite dimensional 'quenched flow' that represents a slow motion to long-wave periodic modulations of bilayer composition. (Received January 15, 2017)