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Alin Pogan* (apogan@indiana.edu), Department of Mathematics, Indiana University, Rawles Hall, 831 East 3rd St, Bloomington, IN 47405, **Arnd Scheel**, University of Minnesota, School of Mathematics, 206 Church Street S.E, Minneapolis, MN , and **Kevin Zumbrun**, Department of Mathematics, Indiana University, Rawles Hall, 831 East 3rd St, Bloomington, IN. *Quasi-Gradient Systems, Modulational Dichotomies, and Stability of spatially periodic patterns.*

We discuss relations between the constrained variational problem and stability of solutions of a class of degenerate “quasi-gradient” systems admitting constraints, including Cahn-Hilliard equations, one- and multi-dimensional viscoelasticity, and coupled conservation law-reaction diffusion systems arising in chemotaxis and related settings. Using the relation between variational stability and the signature of $\frac{\partial c}{\partial \omega}$, where c denote the values of the imposed constraints and ω the associated Lagrange multipliers at a given critical point, we obtain as in the Hamiltonian case a general criterion for co-periodic stability of periodic waves, illuminating and extending a number of previous results obtained by direct Evans function techniques. We also prove that co-periodic and sideband stability are incompatible for all of these models. (Received September 04, 2012)