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Lidia Mrad* (lhrad@purdue.edu) and **Daniel Phillips**. *Gradient Flow of Chevron Structures in Liquid Crystal Cells*.

A chiral Smectic C phase develops in liquid crystals as molecules self-organize into layers with a tilt tracing a helix across layers. In a thin cell, these layers deform into V-shaped layers exhibiting a chevron structure. We study the molecular reorientation dynamics of this structure between two stable states caused by an applied electric field. Our model is based on the Chen-Lubensky energy and we use an iterative minimization technique to construct a sequence of discrete-in-time gradient flows. We establish the existence of a continuous gradient flow that describes the switching process. Moreover, we prove the uniqueness of the solution independent of the method by which it was constructed. (Received August 08, 2015)