1116-35-1769 **Lidia Mrad*** (lmrad@purdue.edu) and **Daniel Phillips**. *Dynamic Analysis of Chevron Structures in Liquid Crystal Cells.*

Liquid crystals are intermediate phases between an isotropic liquid and a crystalline solid. Their molecules posses flow-like properties of liquids and structured order of solids, a combination that renders them useful in optical and display devices, for example. 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. This defect formation inhibits the use of smectics in design, though they promise better quality than nematics which are currently used. 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 choice of minimizers at each time step as well as independent of the particular discretization used. (Received September 21, 2015)