1001-35-167 **Daniel Phillips*** (`phillips@math.purdue.edu`), Department of Mathematics, Purdue University, West Lafayette, IN 47907, and **Sookyung Joo**. *The phase transition between chiral nematic and smectic liquid crystals.*

We study the Chen-Lubensky model used to investigate phase transitions in liquid crystals. In the nematic phase, liquid crystal molecules exhibit one-dimensional order and locally align. In smectic liquid crystals, the molecules in addition form into layers. The C-L energy is a coupling of the first order Frank energy for nematics with a second order Ginzburg Landau energy allowing for smectic structure. We investigate energy minimizers and try to determine their phase based on the values of the material constants and temperature appearing as parameters in the energy. (Received August 24, 2004)