A Study of Transitions in the Smectic C* Phase of Chiral Compounds

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Upon lowering the temperature, the chiral Smectic A* phase of certain liquid crystal compounds experiences subsequent transitions to the Smectic C*, and to the ferroelectric variants of the C*-phase. Static modeling of such phases will be addressed within the framework of a mean-field theory.

Special emphasis will be devoted to the study of free-standing films. Due to their optimal layer ordering for a wide range of thickness, free-standing liquid crystal films provide a unique system to study bulk structures as well as surface effects. The presentation will also address examples of anchoring transitions for such films. Finally, a dynamical model will be employed to estimate switching times between Smectic C* phases when external electric fields are applied.