

PHYSICS COLLOQUIUM, partially funded by the GSFEI

**Tom Lubensky**

Dept. of Physics & Astronomy, University of Pennsylvania

“Liquid Crystals: What they are and why you should know about them”

**Monday, 4/16**

4:00 P.M., Ronald Geballe Auditorium, A-102, PAA

Reception at 3:45 P.M. in the lobby

*seminars*



*April 16-20, 2007*

**Abstract:**

Liquid crystals are soft materials with macroscopic symmetries that fill the gap between the highest-symmetry state of isotropic and homogeneous fluids and the lowest-symmetry state of periodic crystalline solids. They provide us with the language for describing partial rotational and positional order whatever their context. This talk will consider examples from the world of liquid crystals that illustrate both the power of phenomenological reasoning and how symmetry determines long-wavelength, low-frequency, and topological-defect properties of physical systems. It will, in particular, consider twist-grain boundary phases, the liquid crystal analogs of the Abrikosov vortex lattice in superconductors, sliding columnar phases in DNA-lipid complexes, which have quantum analogs in Sliding-Luttinger-liquid phases, and liquid crystalline elastomers, whose remarkable elastic properties are a consequence of a broken symmetry.

**Thursday, 4/19**

**Particle Theory Seminar** Paul Aspinwall, Duke  
2:30 P.M., Rm. C-520, PAT “Topological B-Branes are Easy!”

**Astronomy Colloquium** Nicole Vogt, NMSU  
4:00 P.M., Rm. A-102, PAA “Nine Billion Years of Galaxy Evolution: Disentangling Evolution and Selection Biases in Disk Galaxies”

**Chalkboard Club Seminar** Joe Wasem, UW Physics  
5:00 P.M., Rm. C-520, PAT “Blind Forays into the Epsilon Regime”