



Physics Seminar

Friday, 3:30 pm Jan. 27th, 2012

Optical manipulation of colloids, self-assembled, structures, and topological defects by use of Laser tweezers

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Focused laser beams allow for a remarkable non-contact control that can be applied to objects as diverse as atoms, biological molecules, colloidal particles, and living cells. Optical trapping has been an instrumental technique for many scientific breakthroughs, including the experiments on cooling atoms, obtaining Bose-Einstein condensates, probing mechanical properties of single DNA molecules, etc. This lecture will discuss the applications of laser trapping and laser-assisted structure control in soft condensed matter and biological systems such as liquid crystals, colloids, and bacterial biofilms. Starting from the underpinning physical mechanisms, I will demonstrate that focused laser beams can be used for manipulation of a variety of very different nano- and micron-sized objects. I will also show that the laser traps with optical phase singularities allow one to generate and control topological defects in ordered materials such as liquid crystals.

Location: Ross 0220 (Ground level of Ross Hall)

(Refreshments will be served at 3:20pm.)

Physics/EPS/NHS/UNC
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