Physics Seminar

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Friday October 17, 2008
PSC 3046
4:00 pm

Overcoming the limits and manipulating the properties of light

Light is the fastest means to transmit data between electronic devices. However, the smallest object light can accurately interact with is limited by diffraction. As devices become smaller than the wavelength of light, the feasibility of applications for light seems to decrease. A solution to this problem is the sub-wavelength electromagnetic phenomena known as surface plasmons, which are charge density waves that propagate on a metal surface adjacent to an insulating dielectric.

Surface plasmons have been a useful tool largely utilized by spectroscopists since the 1970's, but have had a resurgence about 5 years ago. The demand for new optical technologies by the telecommunications industry and the field of quantum information, among others, has brought surface plasmons into the limelight.

I will present a detailed discussion on the physical nature of surface plasmons and the physical principles underlying their creation. Then I will discuss the properties of surface plasmons being explored and how they are used to create various technologies. The discussion will be finished with an introduction to my own research in this rapidly developing field.

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