



The Virginia Tech Physics Department presents the following colloquium:

Prof. Guy Indebetouw
(Virginia Tech Physics Dept.)

“Scanning Holographic Microscopy”

Abstract:

Far field microscopy remains an essential tool in biological studies, particularly of live specimens. The availability of a wide range of specific fluorophores (dyes, proteins, Q-dots,...) has made fluorescence microscopy an indispensable tool for cellular dynamics studies. Highly sophisticated microscopic techniques have been developed during the past twenty years (confocal, multi photons,...). As it was about a hundred years ago, the main objective still remains the improvement of the spatial and the temporal resolutions. These two have often non compatible optimal solutions, as better spatial resolution invariably means longer acquisition times.

Digital holographic microscopy can capture 3D information in a single exposure, but cannot be used with fluorescence emission. During the past few years, I have developed a non coherent holographic microscopic method capable of acquiring 3D fluorescence distributions in a single 2D scan. The basic idea is simply to capture the hologram phase in the temporal domain rather than in the spatial domain, thus bypassing the need for any spatial coherence. I will discuss some of the possibilities of the method, and present some preliminary results.

Friday, April 27
210 Robeson Hall
2:30 P.M.