# PHYSICS & ASTRONOMY SEMINAR



Sponsored by the Department of Physics & Astronomy East Tennessee State University, Johnson City, TN 37614

### Manisha Shrestha

Department of Physics and Astronomy University of Denver

will speak on ...

## Polarization Signatures of Stellar Bow Shocks

#### Abstract

Bow shocks around massive stars provide important information regarding the motion of the star, the stellar wind properties and the density of the ISM. Since bow shocks are asymmetric structures, they produce a polarization signal which is a function of stellar wind and the surrounding ISM. We use a Monte Carlo based radiative transfer code (SLIP) to investigate the polarization created when photons from the source get scattered by electrons or dust in a surrounding bow shock. We vary parameters such as optical depth, temperature, and the brightness of the bow shock and compare the simulated flux and polarization behavior with observational data. We discuss the behavior of the observed polarization with viewing angle and other parameters in both the resolved and unresolved cases. We also compare the bow shock results with those produced by other circumstellar morphologies such as disks and shells.

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MONDAY, March 16, 2015, 4:00 p.m. Room 265 (D.M. Brown Hall)

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Refreshments will be served from 3:45-4:00 in Room 265