

Physics & Astronomy Colloquium

Spring 2010

“Brown Dwarfs in the Deep Lens Survey”

Stars come in a range of masses from 0.08 solar masses up to perhaps 50 solar masses. Below 0.08 solar masses, core pressure and temperature are not high enough to fuse hydrogen, and the object is considered a “brown dwarf” rather than a true star. Brown dwarfs are faint and difficult to detect, but measuring their abundance is important for understanding the process of star formation. In this project we will find the abundance of brown dwarfs in the Deep lens Survey by imposing color cuts on the multi-wavelength photometry.

Paulo Lopes

Sac State Physics Major

and

“Synthesis of Samarium Cobalt Nanoblades”

As new portable particle acceleration technologies become feasible the need for small high performance permanent magnets becomes critical. With particle accelerating cavities of few microns, the photonic crystal fiber (PCF) candidate demands magnets of comparable size. To address this need, samarium cobalt (SmCo) nanoblades were synthesized using the polyol process. Since it is preferable to have blades of 1-2 μm in length, key parameters affecting size and morphology including method of stirring, reaction temperature, reaction time and addition of hydroxide were examined. Morphology and size were characterized using a transmission electron microscope (TEM). Powder X-Ray Diffraction (XRD) analysis was conducted to determine composition but no supportive evidence for any particular SmCo phase has yet been observed.

Darren Steele

Sac State Physics Major

Thursday, May 13, 2010
4:00-5:20 PM - MND 1015

Open and free to all students, faculty, and public