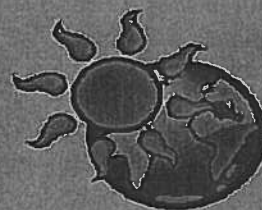


WEEKLY CALENDAR

Physics & Astronomy

202 Nicholson Hall



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<http://www.phys.lsu.edu>

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February 28, 2005

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General Seminar

*The MACHO Project: Halo Dark Matter, Galactic Structure and the Time Domain
OR*

MACHO Ain't Dead Yet"

Dr. Kern Cook

Lawrence Livermore National Laboratory

Thursday, March 3, 2005 at 3:40 PM in Room 109 Nicholson Hall

Host: Dr. Geoffrey Clayton

(Refreshments served at 3:15 p.m. in Room 229 Nicholson)

ABSTRACT

In the last decade, a number of different projects have been mounted to detect and follow the progress of gravitational microlensing by compact objects, an extremely rare event. These projects, driven by the need to monitor millions of potential source stars, have opened the time domain in wide-field astronomy. One of the original projects was the MACHO Project, a survey to determine whether there is a significant baryonic component to the dark matter in the halo of the Milky Way.

The MACHO Project collected 8 years and 7.3 Tbyte of data on 99 square degrees toward the Magellanic Clouds and the bulge of the Milky Way. Half square degree fields were sampled, simultaneously in two bands, roughly every three days and light curves for about 55 million stars to a depth of about magnitude 21 have been collected in a photometry database. This database has been analyzed for microlensing and about 500 events toward the Bulge and about two dozen toward the Magellanic Clouds have been detected. I will review the evidence that MACHO detected an excess of microlensing events toward the Large Magellanic Cloud pointing to the existence of an unknown population of lenses. The MACHO Project also identified about 500,000 variable stars. These have been analyzed yielding new results in the astrophysics of pulsating stars, new categories of stellar variability, and such disparate detections as new high proper motion stars, new quasars and reddening maps of the bulge. The MACHO database and similar ones continue to provide opportunities for new science as well as prototypes for next generation databases generated by future large surveys. I will present some of the recent results from MACHO as examples of scientific investigations using a time-domain database as motivation for future data mining activities.

Welcome To:

Dr. Himadri Chakraborty, a Postdoctoral Researcher with Dr. Mette Gaarde. He is located in Room 218-B, 578-0554.

Visit our webpage for upcoming events: www.phys.lsu.edu