

Abstract Submitted  
for the APR10 Meeting of  
The American Physical Society

**Detecting and Discriminating Gravitational Microlensing in the SuperMACHO Survey** ARTI GARG, LLNL, THE SUPERMACHO PROJECT COLLABORATION — The SuperMACHO Project is a 5 year survey to determine the nature of the lens population responsible for the excess gravitational microlensing rate toward the Large Magellanic Cloud observed by the MACHO project. The MACHO results indicate a large population of compact lenses toward the clouds, and the observed lensing rate is consistent with a Milky Way halo comprised of up to  $\sim 20\%$  Massive Compact Halo Objects (MACHO's), dark matter that is most likely baryonic. This work describes the method by which gravitational microlensing is detected in the SuperMACHO survey. Based on the MACHO findings and the SuperMACHO observing strategy and selection criteria, we expect  $< 10^{-6}$  of the sources monitored to be lensed at any time. Our detection criteria are designed to minimize false positives while preserving a statistically significant detection rate. We provide an overview of the detection criteria. We also discuss the selection criteria used to discriminate between microlensing and other astrophysical transients.

Arti Garg  
LLNL

Date submitted: 18 Dec 2009

Electronic form version 1.4