First Results from the Generation-II OGLE-MOA-Wise Microlensing Survey, 2011 Season

Mr. Shvartzvlad Yossi
yossishv@gmail.com
Tel-Aviv University

Abstract: Microlensing planet surveys have entered the second-generation phase, where a significant fraction of all detected events are being observed continuously in a "survey" mode, that can be considered a controlled experiment, rather than in "follow-up" mode, as has been the case to date.

Our second-generation network includes OGLE and MOA - which are also responsible for the detection of events, and the 1-m telescope at Wise observatory, in Israel, which monitors 8 deg^2 centered on the field with the highest microlensing event rate toward the the Galactic bulge. The Palomar 1.2m Schmidt telescope, used for the PTF survey, also participates in the network for one month a year.

The northern latitude of Wise Observatory sets the seasonal duration of the full-coverage experiment. The 2011 season at Wise lasted from March 5th to September 3rd, with total of 100 nights of observations. OGLE detected during this period total of 1303 microlensing events in the Galactic bulge. MOA detected 410 events, 219 of which were common to OGLE, or 1494 common events. The Wise footprint included 498 common OGLE-MOA events, meaning 1/3 of all detected events have been monitored continuously.

I will show preliminary continuous light curves and anomaly statistics for these 498 events. Analysis of some of the light curves with anomalies, including planetary ones, shows that the "survey-only" data can be sufficient to fully characterize a planet's model parameters (Yee et al. 2011, ApJ, to be submitted). This sample will allow for the first time to estimate the frequency of planetary systems from a controlled experiment (Shvartzvald and Maoz 2011, MNRAS), particularly after the accumulation of several more seasons' worth of data.

A fully automatic pipeline for the reduction of Wise images is ready for implementation starting 2012, including difference image photometry and real-time data output, similar to the OGLE and MOA surveys. This will permit detection of anomalies as they evolve, and triggering of follow-up observations for better characterization of the events, including AO imaging and spectroscopy. We also plan to obtain, using the 18-inch telescope at Wise, three-band photometry at peak for every event, for measuring source colors.