

Microlensing Observations Using the Rosetta Spacecraft

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Abstract: We present observations of galactic bulge microlensing events made by the OSIRIS camera system onboard the ESA Rosetta spacecraft. Rosetta performed 7 observations per field, between September 7th and October 4th 2008, as an extra cruise phase science project following the flyby of asteroid Steins. At this time the spacecraft was around 2.4 - 2.8 AU from the Earth, resulting in a strong parallax signal when the resulting light-curves are compared with ground based (OGLE) photometry. Bright events OGLE-2008-BLG-442, 582, 517, 599, 601 and 641 have so far been detected in the OSIRIS data. Fainter targets are also available in the fields, and the limiting magnitude for useful light-curves will be determined. Preliminary results suggest that the difference in observed peak times (t_0) was typically a few days to a week between Earth and Rosetta, however the difference in impact parameter is more difficult to measure due to the different blending. Fitting PSPL curves to the OSIRIS data was hampered by a lack of baseline observations and extreme blending due to the image scale (3.8 arcsec/pix). Supplementary data taken at higher spatial resolution with ground-based telescopes (with events back at baseline) were used to constrain the blending and produce synthetic baseline magnitudes for the OSIRIS data. The filter used was the OSIRIS Orange filter, which is close to the standard R band. We used the OGLE III photometric catalogue V and I bands to calibrate the OSIRIS data using bright field stars.