

**Characterizing Lenses and Lensed Stars of High-Magnification
Gravitational Microlensing Events With Lenses Passing Over Source Stars**

Mr. Joon-Young Choi
jychoi@astroph.chungbuk.ac.kr
Chungbuk National University

Abstract: We present analysis of the light curves of 9 high-magnification gravitational microlensing events with lenses passing over source stars. For all events, we are able to measure the limb-darkening coefficients of the surface brightness profile of source stars. For 8 events, we measure the Einstein radii and the lens-source relative proper motions. From this, we find that 6 events of them have the Einstein radii less than 0.2 mas, making the lenses of these events candidates of very low-mass stars or brown dwarfs. For the event MOA-2011-BLG-274, especially, we suggest the possibility that the lens is a free-floating planet on the ground of the small Einstein radius of ~ 0.09 mas combined with the short time scale of ~ 3.1 days. For the event MOA-2009-BLG-174, we additionally measured the lens parallax and thus uniquely determined the physical parameters of the lens. The measured lens mass of $\sim 0.8 M_{\text{sun}}$ is consistent with that of a star blended with the source, suggesting the possibility that the blend is a lens. For the systematic integration of information that can be extracted from a sample of events with lenses passing over source stars, we also present the results of 8 other events that were previously analyzed.