The intriguing life of massive galaxies
Proceedings IAU Symposium No. 295, 2012
D. Thomas, A. Pasquali & I. Ferreras, eds.

doi:10.1017/S1743921313004912

Strong Lenses With Single Images

Yiping Shu[1], Adam S. Bolton[1], Joel R. Brownstein[1] and the SLACS Collaborations

[1]Department of Physics and Astronomy, University of Utah,
115 South 1400 East, Salt Lake City, UT 84112, USA
email: ypshu@physics.utah.edu

SLACS for the masses is the extension of the successful Sloan Lens ACS (SLACS) survey (Bolton *et al.* 2006, Treu *et al.* 2006, Koopmans *et al.* 2006, Gavazzi *et al.* 2007 and Bolton *et al.* 2008) but focuses on the lower-mass end of elliptical galaxies (EGs) to yield a more complete strong-lens sample. As to date, 118 out of the 137 proposed candidates have been observed and inspected individually. Among all the targets we have modeled until now, there are:

- 50 grade-A lenses which show clearly lensing features with multiple imaging
- 13 grade-B lenses which have lensing features but no counter-images

The details about image processing can be found in Bolton *et al.* (2006) and Brownstein *et al.* (2012). Here we focus particularly on grade-B lenses which have been barely studied due to the absence of counter-images and the difficulty to construct reliable lens models.

For each grade-B lens, we fix all the other lensing parameters to values suggested by the b-spline fit (Bolton *et al.* 2006) except the Einstein radius $\theta_{\rm Ein}$ which is gradually varied and fit for the lensed image. Eventually we get a chi-square curve as a function of the trial $\theta_{\rm Ein}$ (Figure 1.) from which we can infer its upper limit by looking for a point at which the slope of the chi-square curve changes significantly and the fit goes unreasonable after that point. This set of upper-limit candidates, which are relatively low mass galaxies, extends our understandings of EGs to a wider mass range.

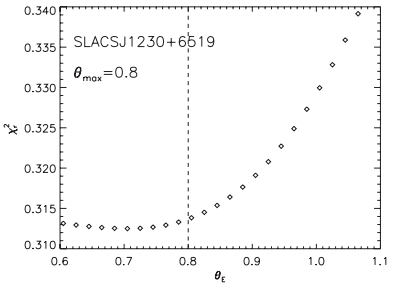

Figure 1. The reduced chi-square curve as a function of the trial Einstein radius for target SLACSJ1230+6519. The dashed line indicates the upper limit of the Einstein radius.

References

Bolton, A. S., Burles S., Koopmans, L. V. E., Treu, T., Moustakas, L. A., & Schlegel, D. J. 2006, *ApJ*, 638, 703

Bolton, A. S., Burles, S., Koopmans, L. V. E., Treu, T., Gavazzi, R., & Moustakas, L. A. 2008, *ApJ*, 682, 964

Brownstein, J. R., Bolton, A. S., Schlegel, D. J., Eisenstein, D. J., Kochanek, C. S., Connolly, N., Maraston, C., Pandey, P., Seitz, S., Wake, D. A., Wood-Vasey, W. M., Brinkmann, J., Schneider, D. P., & Weaver, B. A. 2012, *ApJ*, 744, 41

Gavazzi, R., Treu, T., Rhodes, J. D., Koopmans, L. V. E., Bolton, A. S., Burles, S., Massey, R. J., & Moustakas, L. A. 2007, *ApJ*, 667, 176

Koopmans, L. V. E., Treu, T., Bolton., A. S., Burles, S., & Moustakas, L. A. 2006, *ApJ*, 649, 599

Treu, T., Koopmans, L. V. E., Bolton, A. S., Burles, S., & Moustakas, L. A. 2006, *ApJ*, 640, 662