Wide-field weak lensing by RXJ1347–1145$^1$

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ABSTRACT

We present an analysis of weak lensing observations for RXJ1347–1145 over a 43$'$ × 43$'$ field taken in B and R filters on the Blanco 4m telescope at CTIO. RXJ1347–1145 is a massive cluster at redshift $z = 0.45$. Using a population of galaxies with $20 < R < 26$, we detect a weak lensing signal at the $p < 0.0005$ level, finding best-fit parameters of $\sigma_v = 1400^{+130}_{-140}$ km s$^{-1}$ for a singular isothermal sphere model and $r_{200} = 3.53$ Mpc for a NFW model in an $\Omega_m = 0.3$, $\Omega_\Lambda = 0.7$ cosmology. These values are consistent with the previous weak lensing study of RX J1347–1145 by Fischer & Tyson (1997), as well as recent X-ray studies by Allen et al. (2002) and Ettori et al. (2001). However, these best-fit parameters are not consistent with recent optical velocity dispersion measurements by Cohen & Kneib (2002).

REFERENCES


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