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Elliptical Weighted HOLICs for Weak Lensing Shear Measurement part2:PSF correction and application to Abell 370

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(Submitted on 29 Jul 2011)

We have developed a new method(E-HOLICs) of estimating gravitational shear by adopting an elliptical weight function to measure background galaxy images in our previous paper. Following to the previous paper where isotropic Point Spread Function(PSF) correction is calculated, we consider an anisotropic PSF correction in this paper in order to apply E-HOLICs for real data. A an example, E-HOLICs is applied to Subaru data of massive and compact galaxy clusters A370, and is able to detect double peaks in the central region of the cluster consistent with the analysis of strong lensing. We also study the systematic error in E-HOLICs using STEP II simulation. In particular we consider the dependences of signal to noise ratio "S/N" of background galaxies in the shear estimation. Although E-HOLICs does improve systematic error due to the ellipticity dependence as shown in part 1, a systematic error due to the S/N dependence remains, namely E-HOLICs underestimates shear when background galaxies with low S/N objects are used. We discuss a possible improvement of the S/N dependence.

Submission history

From: Yuki Okura [view email]
[v1] Fri, 29 Jul 2011 03:19:39 GMT (1224kb)

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