

Searching for galaxy clusters using weak gravitational lensing

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Galaxy clusters are the largest collapsed structures in the Universe and are formed due to the amplification of the primordial density inhomogeneities and subsequent merging processes. Measuring their distribution and structures in a large redshift interval provides crucial informations about the history and the large scale structure of the Universe. Weak gravitational lensing provides an opportunity to measure the (projected) mass and matter distribution without any simplified assumptions, such as hydrostatic equilibrium of the intra cluster gas, virial equilibrium and spherical symmetry. Aside from the analysis of already known galaxy clusters, weak lensing techniques can be used to perform a blind search for new, hitherto unknown mass concentrations, with which we then get a purely shear selected cluster sample. We present the results of a blind search for mass concentrations in 50 uncorrelated high-quality VLT/FORS1 fields in I-band using weak lensing.

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