

Precision HST+Spitzer photometry on Frontier Fields Abell2744

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Abstract

The Frontier Fields observational program aims at combining the power of HST observations with the natural gravitational telescopes of high-magnification clusters of galaxies, producing the deepest observations of clusters and their lensed galaxies ever obtained. The program is almost completed on the four target clusters, and a parallel program on the same regions has been completed with Spitzer, allowing for thorough multiwavelength analysis and search of high- z objects. However, obtaining a complete, accurate and reliable multiband photometric catalog is a formidable challenge, precisely because the presence of the massive foreground cluster galaxies and of intra-cluster diffuse light outshines faint, high- z nearby sources.

In the context of the ASTRODEEP consortium, and stemming on the expertise gained within the CANDELS collaboration, we defined a method to circumvent such difficulties and applied it to the first observed cluster, Abell2744. Using publicly available software GALFIT, GALAPAGOS, SEXTRACTOR and T-PHOT, we produce robust analytical multicomponent models of the brightest objects in the field and of the intra-cluster light, through an iterative process aimed at calibrating the right balance between all components. We then proceed removing the models from the HST and Spitzer science images, in order to obtain a fairly accurate detection on the whole residual field, and to produce accurate multiwavelength PSF-matched photometric catalogs. In this contribution, I will give an overview of the method, and present the first results and on-going work.