The DAFT/FADA survey  
(French American DArk energy survey)

F. Durret, M. Ulmer, C. Adami, D. Clowe, L. Guennou, O. Ilbert, V. LeBrun, and the DAFT/FADA collaboration

**Goals**
- Obtain direct constraints on Dark Energy using Weak Lensing Tomography magnified by distant \((z \geq 0.4)\) massive \((\text{mass} \geq 3 \times 10^{14} \text{M}_0)\) clusters
- Build a \(z \sim [0.4-1.0]\) reference sample of clusters and cluster galaxies

**The sample and data**
- 91 clusters with archive HST images in the F814W filter
- Imaging followup in the optical (BVRIz') and IR (IRAC 2.4 and 3.5 \(\mu\)m): about 60 nights telescope time on 4m class telescopes
- Spectroscopic followup to calibrate photo-zs: 22.5 hours on 10m telescopes

**Photometric redshifts**
*Calculated with the LePhare software (Ilbert et al. 2006, A&A 457, 841).*

**Diffuse light**
*Detected by applying a multi scale analysis based on wavelets*
First results on 10 clusters:
A complete analysis of the photometric redshifts obtained for the first ten clusters for which all the data are available is presented in a paper by Guennou et al. (2010), A&A under revision. Photometric redshifts are accurate to 0.05 in the $\sim[0.4,1.0]$ redshift range and in the F814W $[19.5,24.5]$ magnitude range. They now allow weak lensing tomography analyses as well as cluster mass modelling.

We discuss in particular in this paper: the comparison of photo-zs and spec-zs, the effects on photo-zs of spatial resolution and blends of objects, the precision of photo-zs, specially for faint objects, the influence of environmental effects and of galaxy spectral types on the photo-z precision, the comparison with photo-zs measured in the VVDS and EDISCS surveys (HyperZ software).

Determination of the photo-zs for the gravitational arcs in one cluster, allowing mass modelling of the cluster.

The most distant source of diffuse light (to our knowledge) detected in a cluster at $z=0.54$.