

Project

The successful applicant will work at DIFA within the stimulating environment of the Navile Campus in Bologna, the largest cluster of institutes for astrophysical research in Italy (DIFA, INAF-OAS, INAF-IRA, ALMA Regional Center, and the headquarters of the Cherenkov Telescope Array).

The research activity will be done under the supervision of Dr. M. Talia, Dr. M. Moresco and Dr. L. Pozzetti (OAS).

The research project will be focused on the optimal exploitation of the Euclid spectroscopic galaxy surveys, both in the framework of galaxy evolution and cosmological studies.

The main goals of the project will be agreed with the successful applicant among the following:

- (i) contribute to the development and feasibility study of different science cases in the Euclid Deep Fields (including, e.g. updated forecasts for passive galaxies and of Ly α emitters, estimate of metallicity of star-forming galaxies, star-formation histories reconstruction for passive galaxies...)
- (ii) optimization of the Blue Grism observing strategy;
- (iii) explore different spectral stacking methods and assess their performance depending on the different science cases in the framework of the Euclid Science Working Group on Galaxy and AGN evolution;
- (iv) develop and test methods to measure line parameters and spectral indices on composite spectra, consistently with the procedure adopted by the official Euclid pipeline for individual spectra but adapted to the higher S/N that will be achieved through stacking;
- (v) explore and develop methods to optimally select a spectroscopic sample for Euclid clustering measurements, also exploiting machine learning approaches;
- (vi) assess the impact of spectroscopic systematic effects on clustering measurements.

People with a background either in galaxy evolution studies or cosmology are encouraged to apply.

The development of this research project will allow the research fellow to achieve an extended experience in the most modern methods of cosmological and astrophysical investigation. Moreover, the combination of both observational and theoretical aspects will allow the research fellow to grow the scientific expertise in a complete way, thus opening several opportunities for a successful career in cosmology and astrophysics research.