

Short description

Project acronym: **ELSA**
 Project ID (6 digits): **033481**
 Project Participant: **INAF – Osservatorio Astronomico di Torino**

You			Your stay in the network				
NAME, first name	Nationality	Previous place of work/education	Start date	Duration (months)	Category ESR/ER	Place	Country
Abbas, Umami	USA	1. PhD, University of Pittsburgh, Pittsburgh USA 2. ANR-ECOSSTAT Postdoc, LAM, Marseille	5 June 2008	24	ER	INAF – Osservatorio di Torino	Italy

I received my PhD in August, 2006 from the University of Pittsburgh, Pittsburgh, USA under the supervision of Prof Ravi Sheth. My PhD thesis was entitled the 'The environmental dependence of dark matter and galaxy clustering', dealing with the study of the clustering of both dark matter and mock galaxies as seen in N-body simulations as well as galaxies in large scale galaxy surveys at low redshift (i.e. Sloan Digital Sky Survey - SDSS). I carried out the above studies developing and utilizing numerical and analytical tools.

From June, 2006 – May, 2008, I spent my time as a Postdoctoral researcher at the Laboratoire d'Astrophysique de Marseille, Marseille under the ANR – ECOSSTAT project. This ongoing project is aimed at constraining cosmological parameters using the combination of different measurements of data from various surveys – Weak lensing, Supernova Type Ia measurements in the Canada-France-Hawaii Telescope Legacy Survey (CFHTLS), CMB anisotropies from Wilkinson Microwave Anisotropy Probe (WMAP) and clustering of large scale structure in the SDSS and Vimos VLT Deep Surveys (VVDS). Furthermore, I worked on obtaining physical descriptions of the underlying dark matter distribution in large spectroscopic galaxy surveys at high redshift, such as the VVDS and zCosmos.

As of June, 2008 I have been collaborating with the Relativistic Astrometry group at INAF – OATo, Torino within the ELSA training network. This fellowship has provided me with the unique opportunity of pursuing new and challenging avenues of research as well as continuing existing collaborations. I am involved in the development of the Gaia Sphere Reconstruction (GSR) project using java programming language and extensively the GaiaTools, a set of highly structured tools designed, developed and maintained by the software core processing unit of Gaia.

I have had the opportunity of interacting with the different nodes of ELSA through regular meetings within the network. For example, the ELSA school on the science of Gaia (Leiden, Nov 2007) and the ELSA school on software engineering and numerics (Barcelona, Sep 2008)

allowed us ample opportunity to exchange ideas, familiarize ourselves with different paths of research being conducted within the network and obtain useful feedback on our work and presentation skills.

The node at Torino is joining forces with the Lund node to carry out studies on the microlensing of extragalactic objects by nearby stars in our galaxy over the lifetime of the Gaia mission and the effects this could have on the reference frame. This will be done with the help of simulations of the Gaia satellite and its observations carried out with the help of AGISLab (currently under development by ESR Berry Holl, Lennart Lindegren and David Hobbs at Lund Observatory). My secondment to Lund Observatory recently (Oct, 2008) helped us to start this project.

I have presented the work on the GSR project at the ELSA school that was held in Barcelona (Sep, 2008), and the REMAT #4 meeting held in Besancon (Nov, 2008). This work will be presented at the IAU General Assembly meeting to be held in Brazil, Aug 2009, as well as other upcoming international conferences and meetings.