

Short description written by each ESR and ER

Project acronym: **ELSA**
 Project ID (6 digits): **033481**
 Project Participant: **INAF-Astronomical Observatory Of Padova**

You			Your stay in the network				
NAME, first name	Nationality	Previous place of work/education	Start date	Duration (months)	Category ESR/ER	Place	Country
Tenay Saguner	Turkey	University of Ankara/Turkey	01.10.2007	36	ESR	Padova	ITALY

I graduated from University of Ankara Department of Astronomy and Space Sciences in 2004, then I took M.S (master of Science) degree at University of Ankara Department of Astronomy and Space Sciences on Formation and Evolution of Close Binary Systems. For my master thesis I made a theoretical study for determination of the physical parameters for late-type, short period, common envelope phase contact binary stars with Prof. Ethem Derman and I finish it in 2007. During my university and master periods (for 4 year) I worked in Astronomical Observatory of Ankara University as a night observer. In between 2005-2007 years I gave the lesson "Relations Between Astronomical Parameters" for 3rd grade university students.

Now I am a PhD. student at University of Padova Department of Astronomy and I am working at INAF-astronomical Observatory of Padova with Antonella Vallenari. In the ELSA-Gaia mission network I am working on synthetic and observed stellar spectra for training data, automated classification algorithms and astrophysical parameter determination. During the current year I first made a critical review of the high resolution stellar libraries already available in literature for spectrophotometric studies (MILES, INDOUS, Coelho et al 2005) both empirical and synthetic, pointing out the critical points. As starting point toward the construction of a high resolution synthetic stellar library for Gaia population synthesis, I used the Munari et al. (2005, A&A 442, 1127) high resolution stellar library, based on Kuruz models, going from 3000 to 10000 Å and I extended it towards the UV down to 850 Å. This can be useful to include redshift effects and extinction effects on composite population synthesis. In this way I built an high resolution stellar library (R=20000) covering a wide range of spectral types, metallicity, including the alpha enhancement. I developed a code to calculate single stellar populations (SSPs), which are the building blocks of synthetic galaxy spectra. I compared the SSPs with Santos et al. (2002, IAUS, 207, 727) library of observed stellar cluster spectra, in different age and metallicity range, and with spectra of elliptical galaxies taken from SDSS survey.

Preliminary results show that the mean residuals in the spectrum fitting are of the order of 2-3 % for $Z > 0.008$. The ages of the clusters are in reasonable agreement with the ages derived from CMDs, for ages older than 100 Myr. For younger ages statistical effects and/or IMF are important. All this suggest that Munari et al. library can be useful for stellar population synthesis.

During this year I spend 6 months in Asiago, Astrophysical Observatory of Padova for observations, with the aim of deriving templates to be compared with synthetic spectra, in particular at low temperature regime (RGB, AGB) where synthetic spectra present high uncertainties. And I will continue to my observations in the period of my PhD. study.

Schools & Workshops Attended At The First Year (2008-2009)

- ELSA school on the Science of Gaia Lorentz Center-Leiden (November 19-28,2007)
- Scientific Writing For Young Astronomers (SWYA) Blenkenberge –Belgium (May 19-21,2008)
- Java08-Java Workshop ESAC Madrid-Spain (June 16-19,2008)
- ELSA Workshop on Software Engineering and Numerics Barcelona-Spain (September 1-5,2008)
- School of Astrophysics “Francesco Lucchin” Second Cycle 2008Asiago –Italy
Gamma Astrophysics-Galaxy Formation And Evolution (September 21-27,2008)

Courses Taken At The First Year (2008-2009)

Base Courses:

- Cosmologia (N. Bartolo and M. Pietrosi)
- Popolazioni Stellari - Strumenti Interpretativi (Laura Greggio)
- Formazione delle Galassie (Bianca Poggianti)

Monografic Courses:

- Galactic Nuclei (M.Sarzi)
- Modelli per la Formazione delle Galassie (G.L. Granato)
- Large Scale Structure and Galaxy Formation (M. Longair)
- Astrophysical Plasma Spectroscopy (L.C. Popovic)
- Introduzione alle Variabili Cataclismiche (A. Bianchini)