

# PhD School of Astrophysics “Francesco Lucchin”

Asiago, June 24-28, 2013-02-13

This is the first announcement of the National School in Astrophysics for PhD to be held at the Osservatorio Astrofisico dell’Universita’ di Padova in Asiago (Vicenza, Italy) on June 24-28.

## **Aims of the School**

The school is mainly designed for students of PhD program in Astronomy and Physics. It is also open to interested young researches. The school aims at increasing the basic training in Astronomy and Astrophysics, presenting a series of lectures on two of the most forefront research topics. Both observational and theoretical aspects will be present by highest ranked researchers.

The topics covered by the school are:

## **THE EXOPLANET SEARCH. PRESENT STATUS AND FUTURE PROSPECTS (Director Giampaolo Piotto)**

The search and characterization of exoplanets is one of the newest and most attractive fields in modern Astronomy. In less than two decades, it has moved from the enthusiastic discovery of some, often totally unexpected planets orbiting nearby stars, to a mature research. More than 850 planets have been discovered so far, thanks to a huge number of groundbased and space surveys. We are now entering into the even more exiting field of exoplanets structure and atmosphere characterization, with the aim of both understanding planet formation and evolution. The possibility of finding planets in habitable zone, and of searching for signatures of life in their atmosphere is within the reach of present technology. The field is boosted by the interest both of professional astronomers and general public. New surveys, new instruments, new satellites are under development for new, exciting discoveries.

Some of the main actors of the exoplanet research will summarize most recent results, and will present to the students the most immediate research perspectives.

## ***Plan of the Lectures (15h)***

- D. Latham (Harvard Univ.), Photometric techniques for exoplanet search and results (3h)
- Sozzetti (INAF-OATO), Astrometric techniques for exoplanet search and results (3h)
- A. Hatzes (Tautenburg Univ.), Radial velocity techniques for exoplanet search and results (3h)
- R. Gratton (INAF=OAPD), Imaging techniques for planet search and results (3h)
- F. Marzari (Univ. Padova), Formation and dynamical evolution of exoplanetary systems (3h)

## **THE DARK SIDE OF STELLAR AND GALAXY FORMATION** **(Director Alberto Franceschini)**

Infrared astronomy has experienced an extraordinary development since the first dedicated space-born observatory in 1983, the Infrared Astronomical Satellite (IRAS), of which we celebrated this year the thirtieth anniversary.

The IRAS major discoveries, particularly the existence of extremely luminous galaxies in the infrared, as well as of luminous but opaque star-forming regions in our Galaxy, have prompted astronomical institutions around the world to dedicate a remarkable series of new facilities from both space and from ground to this new astronomy at long wavelengths. The last of these is the Atacama Large Millimetric Antenna, ALMA, a huge interferometer making the first astronomical observatory on a planetary scale, currently under construction in Chile.

This new astronomy has essentially revealed that the formation of stars can only happen inside very opaque and thick clouds of gas and dust. Equally evident has turned out that major episodes of the formation of stellar populations in high-redshift galaxies happen inside large concentrations of dusty interstellar media. The school is dedicated to investigate two phenomena on both the stellar and galactic scales.

### ***Plan of the lectures (17 h)***

#### **STAR FORMATION:**

- Francesco Palla (OAFI): Generalities on star formation at low and high redshifts (2 hrs)
- Sergio Molinari (INAF Roma): Progresses on our understanding the processes of star formation in the MW from Herschel observations (3 hrs)
- Leonardo Testi (ESO): The ALMA observatory, overview (1 hrs)
- Leonardo Testi: Perspective use and first results of the ALMA observatory for star-formation studies, astrochemistry, planetary system formation, star-formation in the local universe (2 hrs)

#### **GALAXY FORMATION:**

- Pierluigi Monaco (OATS): Physical models of galaxy formation (3 hrs)
- Laura Silva (OATS): Modelling obscured emission by stars and galaxies (2 hrs)
- Emanuele Daddi (CEA Saclay): Long-wavelength observations of galaxy formation with SCUBA & mm telescopes, radio interferometers, Spitzer, Herschel (1 hrs)
- Seb Oliver (Sussex Univ): Surveys of the high-redshift universe with Spitzer & Herschel (2 hrs)
- Emanuele Daddi: Perspective use of the ALMA observatory for galaxy formation studies (1 hrs)

### ***Practical information***

All details about the school site and organization are given in the web page

[www.astro.unipd.it/ScuolaNazionale2013](http://www.astro.unipd.it/ScuolaNazionale2013)

The registration fee is 250,00 euros inclusive of full board lodging at the "Hotel Pennar" (double room), coffee breaks, and bus transportation from the Venice Airport/Padova train station to Asiago on Sunday June 23 (the time

table will be provided in due time) and return from Asiago to the Padova train station/Venice Airport on Saturday June 29.

Students are expected to arrive in Asiago on Sunday June 23, in the afternoon.

For more information and preliminary registration send an email to:

[stefania.sacchetti@unipd.it](mailto:stefania.sacchetti@unipd.it)

or filling in the form at the registration web page of our site.

Owing to logistic reasons, the maximum number of students is strictly limited.

Acceptance will be first register, first accepted.

A limited financial support is available, on motivated request. See the web page ([www.astro.unipd.it/ScuolaNazionale2013](http://www.astro.unipd.it/ScuolaNazionale2013)) for registration details.

### **IMPORTANT DEADLINES**

**Preliminary registration: Sunday, April 21, 2013**

**Final notification of admission: Tuesday, April 30, 2013**

**Final notification of financial support: Tuesday, April 30, 2013**

**Fee payment for confirmation of registration: Friday, May 31, 2013**