

# Educational activity at IRA

(Gabriele Giovannini - Astronomy Dept. - Bologna University)

## University organization:

1st Degree level for undergraduate students: Astronomy (3yrs)

2nd Degree level (Laurea Magistralis) for graduate students:

Astrophysical and Cosmology (2yrs) "Master"

Each division of IRA has a deep interaction with nearby Universities:

**Bologna** (Dept. of Astronomy, Dept. of Physics, Faculty of Engineering),

**Firenze** (Dept. of Astronomy),

**Noto** Catania (Dept. of Physics), Messina (Faculty of Electronic Engineering)

The interaction between IRA and Bologna University is very strong:

**Northern Cross radio telescope**, owned by the University, is operated by IRA (formal agreement). (From UniBO 60 kE/yr to IRA)

University staff people has working facilities at IRA (rooms, computing facilities, library.....)

Students have access to IRA facilities (library, computing, ....)

## Teaching activity in Bologna:

University staff people are associated to INAF/IRA; main teaching duties are:

D. Dallacasa: Radiation processes;

Radio techniques - laboratory (IRA hosts students)  
in collaboration with T. Venturi, IRA

Jets in Astrophysics

G. Giovannini: Astrophysics

Active Galactic Nuclei

L. Gregorini: General Physics II (electromagnetism)

The non-thermal Galaxy

G. Setti: no teaching duties; fully involved in the Astronomy Dept. and PhD school

R. Fanti and C. Fanti retired from University on 11/05, active in research at IRA

Every year visit to the Medicina Station for young students

IRA is recognized by the Physics Dpt. as a site for training of students.

Master Theses from 2004 at IRA (co-supervised by IRA scientific staff people):

21 students in Astronomy and 4 students in Physics

5 students in Engineering (at Medicina)

**Research Doctorates (PhD):** (low salaries, very few non Italian)

Bologna University: Doctorate school in Mathematical, Physical, and Astronomical Sciences: **PhD in Astronomy: 3 yrs**

IRA scientists regularly supervise PhD theses. Several scientists are regularly involved in giving lectures for PhD courses.

The scientific staff of IRA has a representative in the **school teaching board** (PhD in Astronomy)

2003: 8 positions

2004: 5 positions

2005: 8 positions (1 funded by IRA-INAF)

2006: 15 positions (1 funded by IRA-INAF)

**Small numbers compared to the 4 research institutions in Bologna:**  
**Astronomy Dept. + 3 Research Inst.: OA, IASF, IRA**

PhD students at IRA: 9 (Astronomy) + 1 PhD from Spain + 1 Geodesy +  
2 financed by EU: ESTRELA (2006 and 2007)

ex-IRA students (Master) obtained PhD fellowships abroad  
(e.g. Groningen and Bonn)

## Post Doc positions

(too few, we do our best but financial resources are scarce)

Main problem: low salary + **short periods**

→ outgoing frequent.

Interest and information request from abroad but recruitment difficult for above reasons (some in the past, none at present)

In 2007 2 outgoing: IAC (Spain); CFA (USA)

0 incoming

At present 6 post doc positions at IRA

2 financed by Italian Space Agency (ASI)

1 National Project MIUR

3 INAF (2: ALMA/ARC + 1 ALMA/VLBI)

In Medicina 5 fellowships (Engineering): 3 from ASI

1 EU (SKADS)

1 UniBO (LOFAR)

## In conclusions:

Many young graduated students present at IRA, working for their Master Thesis (Laurea Magistralis)

Good interaction between students and scientific staff (talks, seminars, ....)

International PhD positions

Many PhD find a post-doc position abroad

## Problems (in the italian system):

- Most PhD students from Italy (mostly graduated in Bologna)
- Too few post-doc positions and too short in time  
→ Mostly local (from Bologna) !
- No exchange with post-docs from abroad