



# Student training at the telescope in the 10-m era

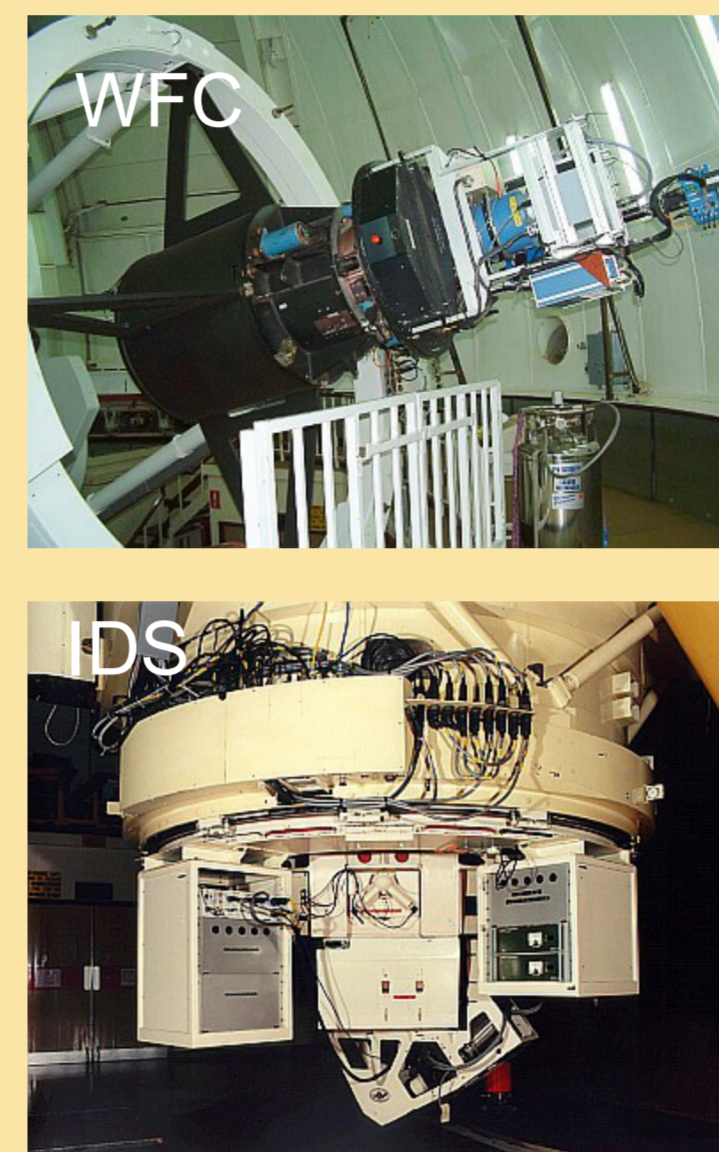
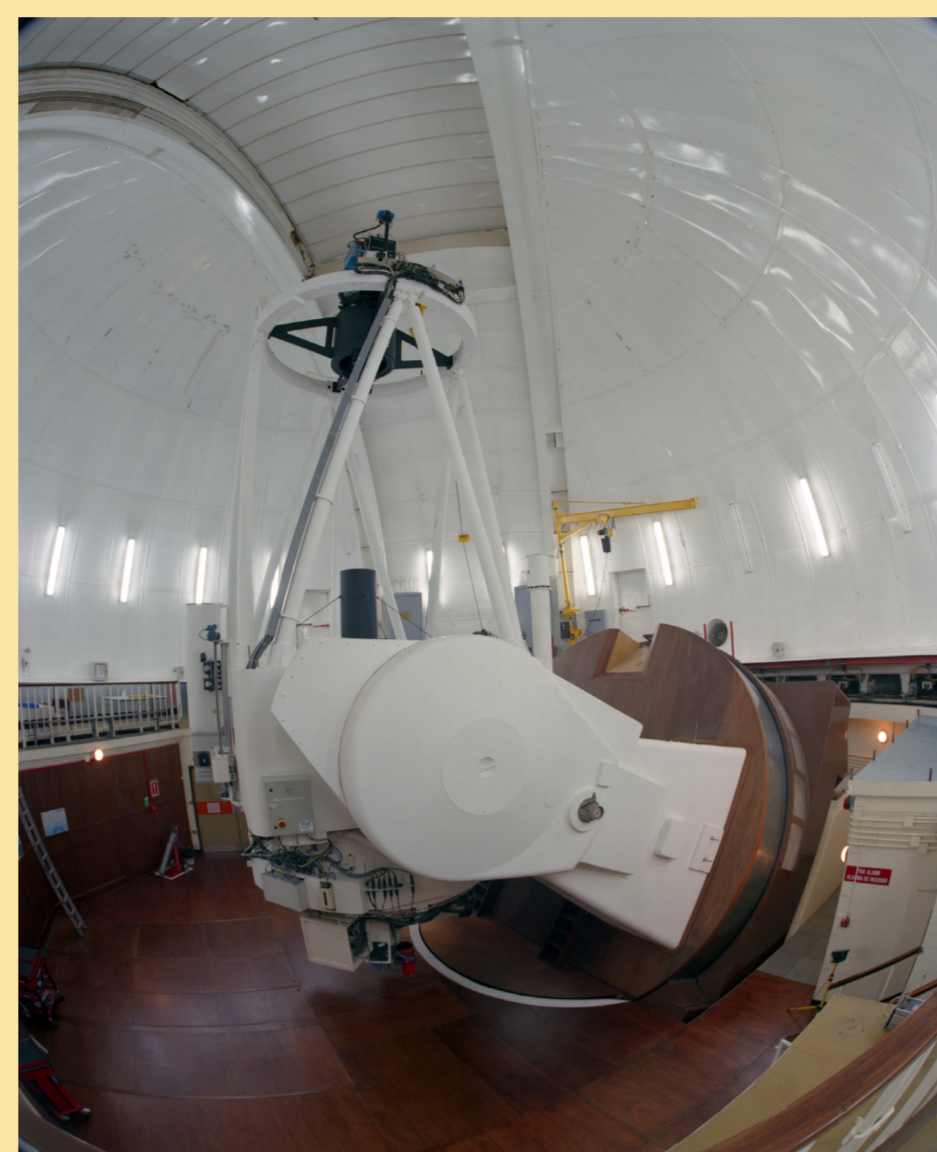
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Isaac Newton Group of Telescopes



## Abstract.

The ING studentship programme has, for more than 10 years now, offered European astronomy students the opportunity to train as an observer on a medium-sized ground-based optical telescope. This is particularly important in the era of very large telescopes and their queue-scheduled observing. This limits direct access by young astronomers, and is giving rise to a generation of astronomers with much reduced experience of observing.

The 2.5-m Isaac Newton Telescope (INT) is operated at the Observatorio del Roque de los Muchachos on the island of La Palma (Canary Islands, Spain) by the Isaac Newton Group of Telescopes (ING). The INT is used for astrophysical research by a large community of astronomers worldwide. It currently houses two highly competitive instruments: the **Wide Field Camera (WFC)**, which offers one of the largest available broad- and narrow-band filter sets for wide field imaging, and the **Intermediate Dispersion Spectrograph (IDS)**, a very versatile long-slit spectrograph.



Its imaging and spectroscopic capabilities make the INT a unique hands-on training facility for students just starting their careers in astronomy and astrophysics. The INT offers visitor-mode observations only, so a high degree of interaction with visiting astronomers working in a wide variety of topics is guaranteed.



Telescope zero-setting

## ING resident studentship program

The ING studentship program offers to 4 students (PhD/Master) from any European country a 1-year stay at the ING learning different aspects of the operations of an observatory.

During their stay the student main duties consist of managing and supporting all the INT observations using the WFC and the IDS. They are also involved in ING projects related to instrumental, optical, or software development, improvement and/or characterization. Besides, they have ~60% of time for doing research.

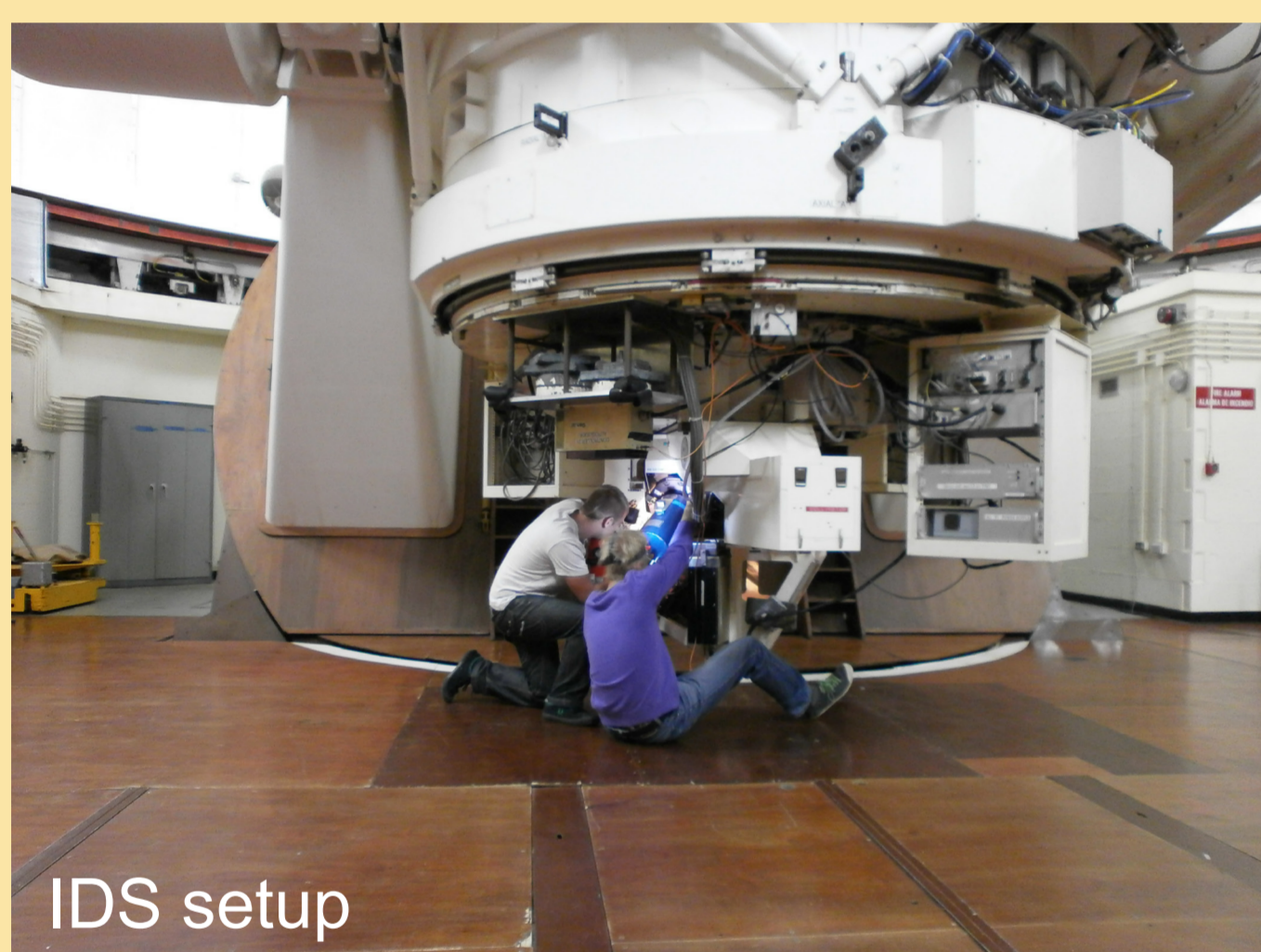
Our program allows them to get in contact with the instrumental and engineering side of an observatory. They are trained on how to operate the telescope and fix technical problems. They learn how to setup the instruments for the observers (mounting filters, gratings, focusing the spectrograph, quality control tests, etc.).

Besides the technical knowledge of the telescope and the instrumentation, they learn and deal with many observing techniques as a result of carrying out different kinds of observing programs and discretionary tasks.

They are also in contact with the visiting astronomers performing different science cases. This provides the students with a wider perspective of the astrophysical research. In this enriching environment they have the opportunity to pursue their own research.



Observers' introduction



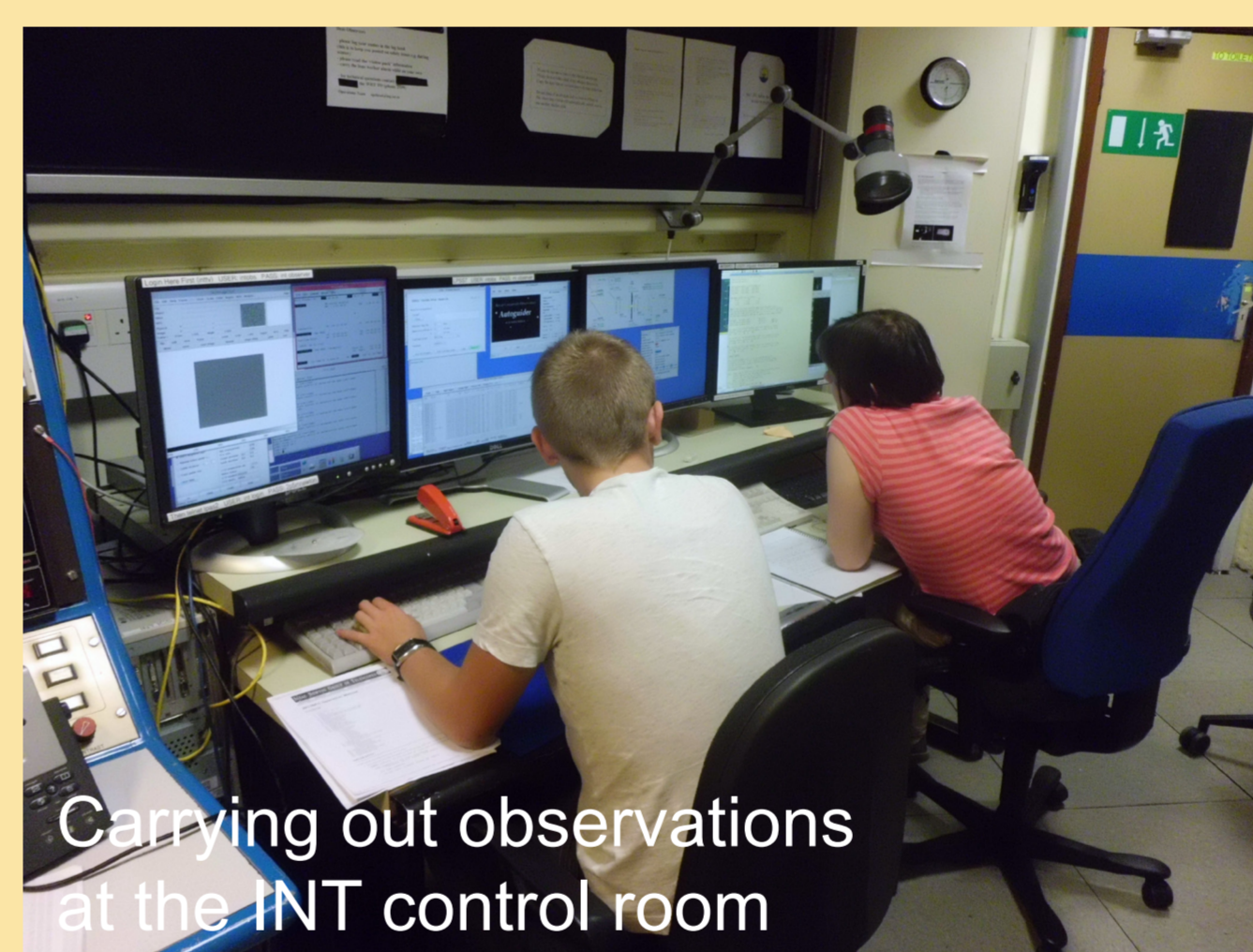
IDS setup



Mounting filters in WFC



IDS setup



Carrying out observations at the INT control room



Filling WFC cryostat

## Training agreement with Iranian National Observatory

Astronomers at the Iranian National Observatory (INO) are planning the construction of a 3.4-m telescope in Iran. First light is expected ~ 2015. To provide the Iranian astronomy community with a broader base of observational experience, Iranian student astronomers visit ING for extended periods, training up as INT support astronomers, and helping to carry out observations for visiting Iranian teams.

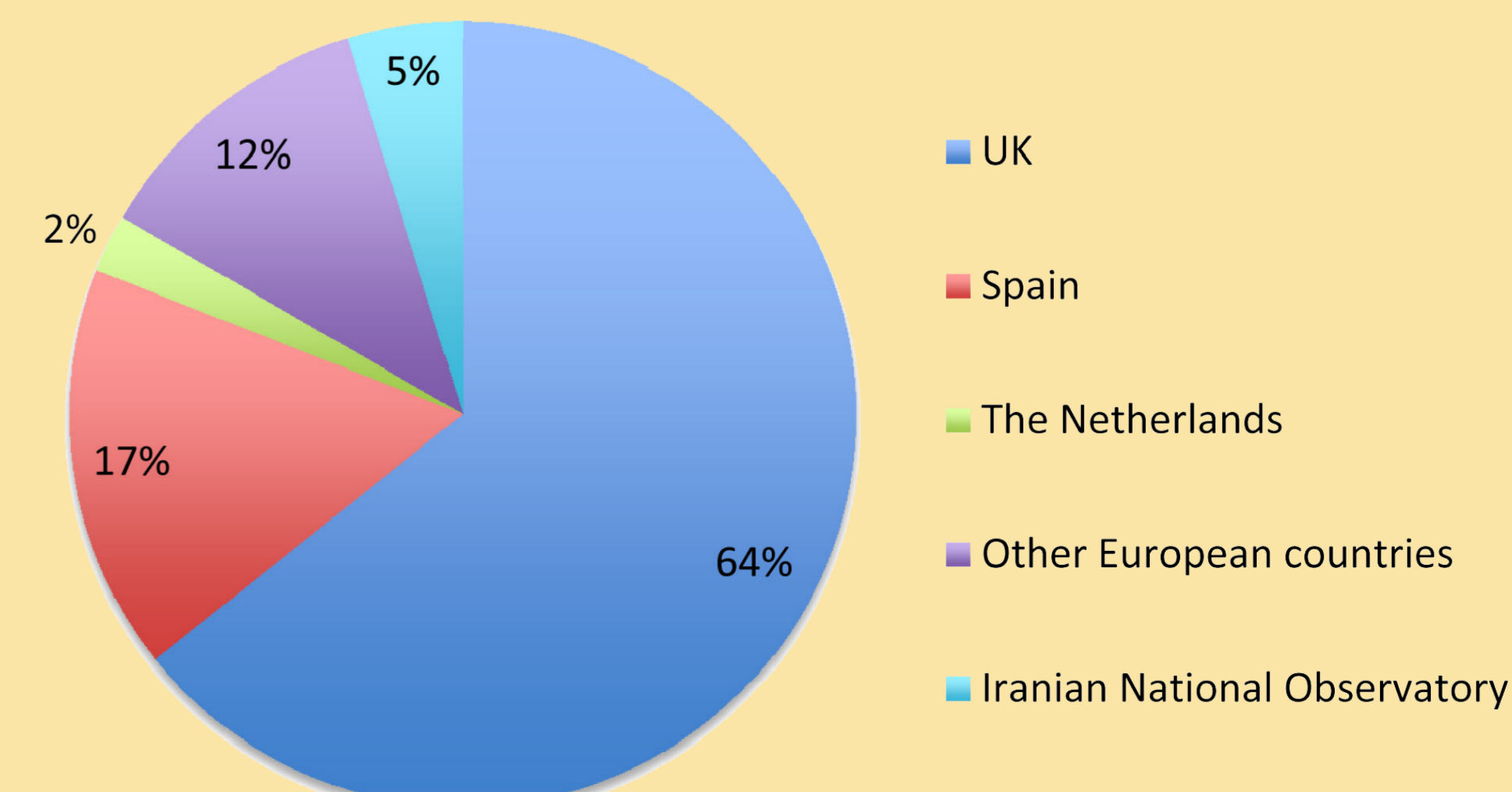
We have hosted two students so far: Shant Baghrmian (now at the Perimeter Institute in Canada) and Mansour Karami (at ING during 2011/12). A third student is expected shortly.



## Students by country of origin

Since 2002 ING has hosted 42 students from different nationalities and institutions, who have been formed as support astronomers. In the accompanying figure, are shown the percentage of students coming from the different countries.

Most of the students come from UK, mainly from Sheffield, Hertfordshire, Belfast and Manchester Universities. Spain is the second country in students to the ING, mainly from IAC.



ING encourages students from all countries, and in particular the ING partner countries institutions to participate in the ING studentship program.

To apply:  
<http://www.ing.iac.es/astronomy/science/studentship.html>

## Other student training schemes

ING has hosted training workshops such as the NEON observing school, and supported the training of students as part of under- or post-graduate courses, in the form of visits to the telescopes or allocated observing runs on the INT.

