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THE 3rd ESO/OHP SUMMER SCHOOL:

Provençal Summer, Hard Work and Warm Hospitality

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Introduction

Counting the observatories that on the territories of the ESO member countries still operate several telescopes with up-to-date instrumentation, requires the fingers not even of one hand. Accordingly scarce are the opportunities for students to get practical observing experience before this experience is really needed. The scope of the ESO/OHP Summer Schools is to help alleviating this deficiency. For obvious practical reasons neither La Silla and certainly not Garching are suitable sites for this purpose.

One of the few remaining observatories in Europe is the Observatoire de Haute-Provence (OHP). It is named after one of the most attractive regions in the south of France. However, between July 15 and 25 the focus of the attention of 18 graduate students from nine different countries was not on tourism but on the OHP where the third ESO/OHP Summer School took place. Their aim was to partly fill in the observational void in the standard university curriculum.

Practical Work

The layout of the School followed the scheme that had proved useful already in 1988 and 1990 (cf. *The Messenger* No. 53, p. 11, and No. 61, p. 8). Seven tutors (Claude Chevalier, Denis Gillet, Sergio Ilovaisky, and Philippe Prugniel from the OHP, Alain Jorissen, Werner Zeilinger and D.B. from Garching) had designed six small observing programmes for as many groups of three students each. The preparation started already the first afternoon, only interrupted by a small reception and the subsequent dinner, because the first observations were to be done the following night.

Each group had one night at the 1.2-m telescope for direct imaging with a CCD camera. For the spectroscopic part, three groups worked at the 1.93-m

telescope with its Cassegrain spectrograph Carelec, and the other three used the high-resolution coudé spectrograph Aurelie of the 1.5-m telescope. These two instruments, too, deploy a CCD as the detector.

The director of the OHP, Philippe Véron, had in his welcoming address emphasized the observatory's efforts in the previous weeks to save some good weather for the Summer School. These efforts proved, in fact, quite successful. Only one group had to depend on one of the spare nights for a second attempt to obtain a useful set of direct images. The amount of observations kept the students more than busy with the reduction

of their data, using either MIDAS or IHAP or both. The prediction by the organizers that during the School sleep would at best be optional was amply confirmed, especially in the night before the last day in the morning of which each group had to present its results to the other participants.

The diversity of scientific subjects was quite considerable: rotation curves of spiral galaxies and triaxiality of their bulges, a search for inhomogeneities in the internal extinction of a planetary nebula, the optical identification of ROSAT X-ray sources, photometry of an open star cluster in search for δ Scuti stars and the detection of the spectro-



Figure 1: In the break of Hans Dekker's talk, students, tutors, and organizers assembled in the shadow of a tree for a group photograph. First row (from left to right): Mathias Kunz, Hans Dekker, Nadine Rons, Jesús Gallego, Iordanika Borissova, Christian Surace, Simon Portegies-Zwart; sitting: Lutz Wisotzki; second row: Jean-Philippe Beaulieu, Sandro Bardelli, Helmut Jerjen, Salvatore Scuderi, Susanne Vogel, Mira Véron; third and fourth row: Dietrich Baade, Roland Reiss, Richard Dallier, Eugenio Carretta, Nancy Ageorges, Mikael Sahrling, Volker Ossenkopf, Werner Zeilinger, Alain Jorissen, Marc Ferrari, Karine Bocchialini.

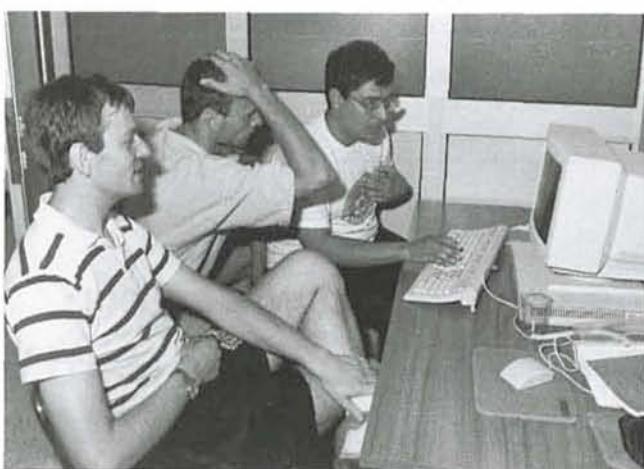


Figure 2: Data reduction accounted for most of the work done by the students. (a) Sergio Ilovaisky shows Mathias Kunz, Karine Bocchialini, and Simon Portegies-Zwart (from left to right) how to sweep blemishes from a CCD image. (b) Tutor Philippe Prugniel and students Volker Ossenkopf and Jesús Gallego (from left to right) seem to have slightly different views of the ease of learning to use PLEINPOT.

copic signature of high-order nonradial pulsation in such stars, follow-up photometry of some recent supernovae, the rejection of an earlier suggestion of shocks in the atmosphere of a bright low-amplitude β Cephei star, a search for technetium in red giants and candidate-AGB stars, and a new determination of the velocity dispersion in an elliptical galaxy which now is in much better agreement with the general velocity dispersion-absolute magnitude calibration. However, the purpose of the School was not to give the students deep insights into these subjects. Rather, the topics had been chosen as an illustration of how an observing programme is to be carried out from its definition to the formulation of the results and the estimate of their significance. The aim was that after these exercises the students would be in a position to conceive and conduct observing programmes of their own.

Theoretical Reinforcement

In order to provide the students with a more systematic introduction to the tools they were using, a number of experts had been invited to give a one-and-a-half hour lecture (cf. box). Most speakers kindly agreed to stay for an extra day or two so that the students

had the opportunity to discuss subjects which were of particular interest to them in more depth. Ray Wilson also demonstrated at the 1.2-m telescope what can be deduced about a telescope's aberrations from an image of its pupil. At the same telescope Roland Reiss together with the students measured the readout noise and gain of the CCD camera and its controller.

Unfortunately, a sudden health problem prevented Pierre Léna from giving his lecture on high-resolution imaging. However, on a short notice this gap could be filled by the kind agreement of Jean-Paul Schneider of the Atmospheric Research Group and Michel Grenon of the Geneva Observatory to demonstrate the LIDAR experiment for the determination of the ozone contents of the upper atmosphere from the back-scattered light of a laser beam and the CORAVEL stellar radial velocity measuring engine, respectively.

Of course, competence in handling an instrument and reducing the data obtained with it can only be an intermediate goal for an astronomer. The interpretative power of cleverly designed observational experiments and a thoughtful analysis of their results was beautifully demonstrated by Gustav Tammann in a lively talk given in his typical, unmistakable style.

Relaxation

An important contributor to keeping the level of the intensity of the work as high as it actually was were a few social activities which were much enjoyed by everyone. On Sunday, July 19th, a full-day excursion was organized by Philippe Prugniel to the town of Gordes which is magnificently set on a steep hill and to the nearby 12th-century Abbey of Senanque and the museum village des Bories with its curious houses made of piled-up natural stone plates. The Gordian knot had to be cut only a few days later during the Petanque (Boule) tournament (also arranged by Philippe Prugniel) when the book keeping of the results of matches between many teams of ever changing compositions demanded the utmost of its organizers. However, there was unanimous agreement that a team formed by three ladies from the OHP hotel (Maison Jean Perrin) beat all other teams by their outstanding performance. This certainly is explained by all three team members being locals and thereby having grown up with this national pastime of the south of France. However, a more relevant inference is the level of quality which the participants enjoyed in the services provided by the kitchen.

Judging by the feedback provided by the students, all of them got something out of their stay at the OHP, although everyone differently according to personal background and interest. On behalf of the students, we cordially thank our numerous colleagues who in addition to their usual workload and in many different ways have made essential contributions to what appears to have been a successful summer school in the practice of astronomical observing techniques.

| Lecturers | Subjects |
|---|---|
| H. Dekker (ESO): J.-M. Lecontel (Nice): S. Ortolani (Padova): R. Reiss (ESO): G. A. Tammann (Basel): M. Véron (OHP), D. Baade (ESO): R. Wilson (ESO): L. Wisotzki (Hamburg): | Concept and Design of Optical Instruments High-resolution Spectroscopy Crowded Field Photometry Charge-coupled Devices The Local Extragalactic and Cosmic Expansion Field Data Reduction Techniques Modern Telescope Layout Low-resolution and Slitless Spectroscopy |