

# The 2010 SPIE Symposium on Astronomical Telescopes and Instrumentation

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A brief overview of the 2010 SPIE Symposium on Astronomical Telescopes and Instrumentation, with emphasis on the ESO contributions, is presented.

The biennial SPIE meetings on Telescopes and Instrumentation provide a unique opportunity for people working in astronomical technology to meet, present developments and share ideas. The 2010 symposium was held from 27 June to 2 July in San Diego. It included over 2000 papers submitted to 12 different conferences covering a whole range of activities including space- and ground-based telescopes and instrumentation, adaptive optics, optical and infrared interferometry, observatory operations, modelling, systems engineering and project management, technologies for ground- and space-based astronomy, software and cyber infrastructure, and detectors for wavelengths from the millimetre to high energy. Formal conferences, talks and papers are of course only part of the event and one of the most important aspects of any SPIE conference is the large number of both planned and impromptu discussions between colleagues from all over the globe, crucial for the sharing of knowledge and experience and establishing new collaborations.

The organisation and logistics of such a large conference are important to achieving a successful outcome. Poor air conditioning or unclear audio can make attending the long sessions difficult and ruin the effective exchange of information. In this respect, the conference facilities in San Diego were of a very high standard, with excellent audio-visual equipment, including twin giant projection screens in the largest hall used for the plenary sessions (one screen for the presentation, one for a giant head-and-shoulders view of the speaker). The good organisation of catering and availability of quick lunches helped everyone keep to schedule. Even the wireless internet connections for such a large number of participants functioned reasonably well.



Figure 1. The ESO stand at the 2010 SPIE Symposium held in San Diego showing a model of the European Extremely Large Telescope.

SPIE symposia usually include plenary sessions in which all registered participants gather in one room to view presentations by invited speakers. The plenary session speakers this year were selected to give a scientific overview of many topical areas in astronomy and were asked to present these at a suitable level for the cross-disciplinary audience of astronomers, engineers and physicists. These sessions were very well attended with most of the several thousand symposium attendees present. Space astronomy was highlighted, with talks about ESA space science, Herschel, Hinode, Fermi, Chandra and XMM-Newton. Ground-based science was also covered with talks about ALMA science, ELT science (given by Roberto Gilmozzi of ESO), survey astronomy, and dark matter and energy.

Given the importance of astronomical technology for ESO, a large number of our staff attended the conference, and over 80 oral and poster papers were either prepared or contributed by ESO staff attending the symposium. I give a few examples here, showing the wide range of topics covered:

- 2010 update on the VLTI status at Paranal by Pierre Haguenaer et al.;
- A summary of the current X-shooter performance by Joel Vernet et al.;
- An overview of the science goals and possible performance of an extreme-AO planet-detection instrument (EPICS) for the E-ELT by Markus Kasper et al.;
- A digest of ten years of experience with the VLT operations and data-flow architecture by Francesca Primas;

- Ultra-stable operation of detectors for high resolution/stability spectrographs by Antonio Manescau et al.;
- Green alternatives to fossil-fuel power generation for modern observatories by Ueli Weilenmann et al.

In addition ESO staff played an important role in the symposium planning and organisation, contributing a symposium co-chair, five conference chairs, and many people within the programme committees for each conference. A novel aspect of SPIE is the availability of courses (typically half to one day) covering various important skills. This year courses included adaptive optics and systems engineering for astronomy projects. A course on scalable frameworks for observatory software was presented by Gianluca Chiozzi of ESO.

A particularly interesting part of any SPIE symposium is the exhibition by industry and astronomical institutes and organisations. Over 70 different exhibits were on show covering most technologies and manufacturing processes required for astronomical facilities. This was also a great opportunity to discuss progress and capabilities with manufacturers to try to get a glimpse over the technological horizon. An ESO display was set up (Figure 1) and staffed on hourly shifts by ESO personnel attending the symposium.

In summary, the San Diego meeting appears to have been a great success. SPIE meetings usually alternate across the Atlantic, so the next one returns to Europe in 2012 and will be held in Amsterdam.