

# Scientific Report of the Workshop

of the COST-Action MP-1104 ([www.polarization.eu](http://www.polarization.eu))  
“Polarimetry as a tool to study the Solar System and beyond”

## Calibration targets for astronomical polarimetry for the 0.3 to 30 $\mu\text{m}$ wavelength range

### Workshop details:

**Date:** January 23-24, 2013,

**Place:** Institute of Astronomy, ETH Zurich, Switzerland

**SOC:** Stefano Bagnulo, Mathieu Barthelemy, Silvano Fineschi, Herve Lamy, Arturo Lopez Ariste, Hans Martin Schmid (chair), Frans Snik.

**LOC:** M. Chiesi, H.M. Schmid

### Scientific report:

The meeting on polarimetric calibration attracted 30 experts working in the field of astronomical observation and instrumentation. In total 23 talks were given, and 3 specific discussion sessions were held. Besides participants from COST countries, there were in particular 2 persons from Japan, 1 person from the US and 1 person from South Africa. An important aspect of the meeting was that we could gather experts with experience with different instruments and with different science fields, but all using polarimetric techniques. All participants could therefore profit from the experience of the other participants in how they calibrate their scientific data.

The 20 scientific talks were arranged in four sessions on (1) standard stars, (2) calibration of solar polarimetry and Earth atmosphere observations, (3) calibration of instruments, and (4) future polarimetric instruments. Many talks were followed by lively and very interesting discussions for which ample time was scheduled.

Preceding the workshop a questionnaire was distributed with 30 questions on “Polarimetric standard stars used for past and future polarimetric observing programs”. Ten questionnaires were filled and returned and the result of this survey was presented by H.M. Schmid as starting point for the discussion “On the need for better polarimetric standard stars”. The second discussion session on the definition of polarimetric parameters was introduced by two talks from S. Bagnulo and F. Snik. In this discussion it became clear that there are still different definitions for polarization parameters used by different research communities, what leads to much confusion.

The talks, the questionnaire and the discussions showed clearly that the quality of the calibration stars for measurements of the circular polarization is very poor and that the sky distribution of the calibration stars for linear polarization measurements should be improved. Further it was found that we need to compile the available calibration targets and compare the results from different studies. It was also clearly recognized that this COST-action should issue a “guide line for the use of polarization parameters”.

In the final discussion there were many positive statements about the usefulness of such technical meetings, bringing together the experts from different fields. It is the strong wish of the participants to keep the momentum of this workshop for the COST action MP-1104. Important action items defined were among others the creation of (a) a web-based compilation of standard star studies, (b) a presentation of the questionnaire results on the web, (c) recommendations for the definition of polarization parameters, and (d) a call to all polarimetrists to include in their scientific publications more space on their standard star measurements and a clear description of the used polarimetric calibration strategies.