ISTITUTO RICERCHE SOLARI LOCARNO
POSTDOCTORAL POSITION

Istituto Ricerche Solari Locarno (IRSOL), located in the Italian-speaking southern part of Switzerland, is a solar research institute that operates a facility optimized for high-precision imaging spectro-polarimetry (see www.irsol.ch). The Institute is associated with the Università della Svizzera italiana (USI). IRSOL is offering a postdoc position in the field of instrumental development and solar physics, financed by the H2020 project SOLARNET-2.

High-sensitivity instruments, capable of measuring very small polarization signals, have been used for many years. Although these instruments can reach sensitivities down to 10^{-5}, the absolute value of the measured signals is generally limited to an accuracy of 10^{-3} at most due to the spurious signals induced by their various optical components, starting from the telescope main mirror down to the detector.
The possibility of measuring the absolute value of the polarization with a very high precision would represent a key achievement in the field of solar spectro-polarimetry. In particular, it would represent a major breakthrough in the measurement of spectral line polarization signals. Indeed, their amplitude and shape could be precisely determined without the uncertainties that are necessarily introduced when the overall polarization scale of the observation is adjusted on the basis of theoretical values of the continuum polarization level, as it is presently done.
At IRSOL, for measuring the continuum polarization with a very high absolute precision, a new method was used that permits to achieve excellent results combining low frequency modulation, obtained rotating a retarder located in front of the telescope, and high frequency modulation performed with a high sensitivity polarimeter located after the telescope.

Tasks: The postdoc is expected to improve this method, extending its applicability to a wide variety of polarization measurements where high precision is required in its absolute value. Furthermore, the application of this technique at high spatial resolution, using large aperture solar telescopes, should be studied. In particular, the postdoc will have the following responsibilities:

- Leading the project according to the goals of SOLARNET-2.
- Analytically studying the method and finding optimum modulation schemes for measuring linear and circular polarization.
- Performing various test measurements to explore the strengths and limitations of the method.
- Designing and realizing an additional slow modulation system located near the secondary focus at the GREGOR telescope.
- Performing scientific measurements.
- Reporting the results, writing publications and participating in project meetings.

Position requirements: The candidate should preferably have a background in solar physics with experience in polarimetry and good practical knowledge in instrumental development. The capability to conduct independent work and good communication skills are expected.

Remuneration: The gross annual salary for the first year will be CHF 80,000 (the annual salary will gradually increase).

Duration: The expected starting date is the beginning of May 2019 (postponement negotiable). It is a two year position with the possibility of applying for renewal.

How to apply: Applications must be sent via e-mail to *application2@irsol.ch* and must include the following documentation:

- Curriculum Vitae
- Publication list
- Research activity report and statement of suitability for the position (max. 2 pages)
- References (names and e-mails) of three scientists familiar with the work of the candidate

Review: Review of applications will begin March 31st 2019

Contact: For inquiries please contact Dr. Michele Bianda (mbianda@irsol.ch)