



STSM Scientific Report Template

Applicant and home institution : Tanausú del Pino Alemán. Instituto de Astrofísica de Canarias

Visited scientist and host institution : Luca Belluzzi. Istituto Ricerche Solari Locarno

Dates of STSM : From 13-07-2014 to 26-07-2014

Explain briefly below how your STSM matched one of these key-points :

1. strengthen current collaborative projects
2. establish new collaborations
3. obtain necessary knowledge for the application of new techniques
4. use host infrastructures that are not available at the home institute.

This working visit to IRSOL funded by COST has allowed me to work with Dr. Luca Belluzzi on a previously started collaboration on theoretical research, as well as with Drs. Michele Bianda and Renzo Ramdelli on related spectropolarimetric observations. The research problems are directly related with my PhD thesis, whose advisors are Prof. Javier Trujillo Bueno and Dr. Rafael Manso Sainz.

The main objective of this STSM was the use of the IRSOL telescope with ZIMPOL to observe a series of lines whose scattering polarization is not fully understood, with the intention to compare the new observations with the current theoretical results and to get an observational basis for subsequent research in this field.

The observations taken during this STSM have allowed the establishment of a new collaboration with the aim to find the theoretical frame in which these spectral lines can be explained and to study their possibility as diagnosis tools of the solar atmosphere and, in particular, of the solar magnetism.

Describe below the activities carried out during the STSM and the main results obtained.

During this STSM the main activity has been the observation of the Stokes profiles in a series of interesting and poorly understood spectral lines. We could observe all the planned spectral lines: Ba II D1 (493.4 nm), Na I D1 (589.6 nm) and the Ba II triplet (585.4, 614.2, 649.7 nm). The good weather conditions allowed us to observe intensively all these lines, analyzing their near-limb polarization in several positions on the solar disk and the variation with the distance to the disk center. The results were very satisfactory and now we have a considerable amount of data to analyze in collaboration between the two institutions (IAC and IRSOL).

In addition, we could continue a previously started theoretical collaboration with Dr. Luca Belluzzi on the joint effect of the "Key mechanism" (Belluzzi & Trujillo Bueno 2013) and the non-coherent continuum scattering (del Pino Alemán et al. 2014) in several spectral lines, like the Mg II resonant lines and the Ba II D1 line.

For all the above reasons I consider that this working visit financed by our COST actions has been very productive and useful for my PhD thesis.