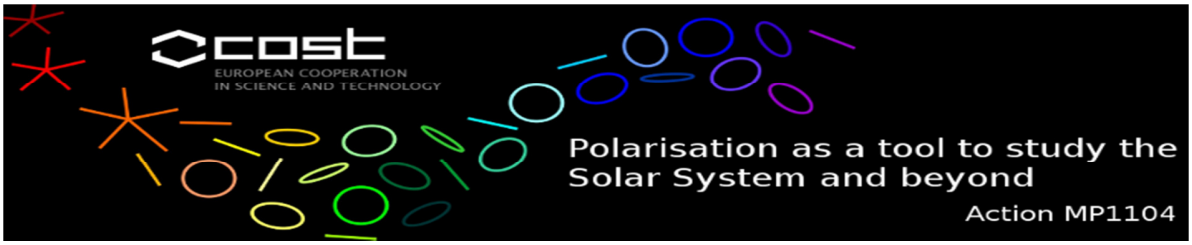

STSM Scientific Report : 1er cru instrument, preparation of the first observing winter campaign

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Visited scientist and host institution : Dr. Hervé Lamy, BISA (Brussels, BE)

Dates of STSM : 04-08/08/2014

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 STSM is the continuation of a work started 2 years ago in order to jointly develop a spectropolarimeter for auroral spectra. It has allowed to finalize the design and start the calibration tests (point 1)

- During this STSM we have used the facilities of the optical lab of BISA and the workshop of BISA has produced different mechanical devices needed for the final design and for the tests (point 4).

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

The 1er cru instrument is a spectropolarimeter which will allow to measure for the first time the polarisation of the auroral spectra between 400 and 700nm. The polarisation of the auroral red line at 630nm has been investigated by Lilensten et al. (2008), Barthelemy et al (2011) and Lilensten et al. (2012) using a photomultiplier, a rotating polarising filter and a narrow interference filter. With the new instrument we want to obtain better calibrated data of the red line polarisation and explore the possible polarisation of other lines of the auroral spectrum.

The instrument is nearly ready but some problems remained and needed to be fixed before the first observing campaign that will be carried out in Skibotn (Norway) in winter 2014 :

- the focalisation on the optical fibers collimators was not optimal : this has been fixed during the two first days of the mission. New lenses with slightly different focal lengths have been used.

- wavelength calibration : we have tested the procedure of the camera+spectrograph calibration with Hg and Hg-Cd spectral lamps. The procedure now works with the 3 gratings producing the adequate wavelength resolution and symmetrical lines.

- we have tested the software for controlling the Half Wave Plate. However, we still have a small problem in increasing the rotation speed. We will contact the seller to solve this issue.

- we have tested the polarising filter that can be added in front of the telescope entry to test the relative sensitivity of the two optical fibers. Qualitative measurements have been done, quantitative tests will follow.

Tests with the PlanetTerrella located at some distance to “simulate” a faint distant source with spectral lines could not be carried out and are planned in the next few weeks.