



STSM Scientific Report Template

Applicant and home institution : Dr. Krzysztof Krzeszowski, Kepler Institute of Astronomy, University of Zielona Góra, Poland

Visited scientist and host institution : Dr. Pablo Reig, Foundation for Research and Technology - Hellas / University of Crete, Heraklion, Greece

Dates of STSM : 24.08.2013 – 07.09.2013

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 fulfilled a few goals. It allowed me to strengthen collaboration with Dr. Pablo Reig as well as establish new collaboration with RoboPol consortium, especially with Dr. Dmitry Blinov. RoboPol is a new instrument working at 1.3-m telescope at Skinakas Observatory, Crete, Greece. The main optical part of the RoboPol is a double Wollaston prism that produce four images of the source with orientations of 0, 45, 90, 135 degrees that allow to measure optical linear polarization. It is a large-sample, high-cadence, polarimetric monitoring program of blazars in optical wavelengths, using a camera specifically constructed for this project. I was able to learn the usage of RoboPol and its pipeline for raw data reduction. We were also able to compare our methods of calculating Stokes parameters of observed sources. RoboPol's control software, as well as the pipeline is based on Python programming language and its libraries which is the same as of our software for polarimetric images analysis. Although the approach is different, we get consistent results which proves both software suites to be working correctly.

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

Activities carried out during the STSM:

- I completed the application of Sparks & Axon method for obtaining Stokes parameters from three polarimeters in case of images;
- I successfully compared the results of the algorithm with recently published results (Moran et al. 2013);
- I started application of n-polarimeter algorithm for obtaining Stokes parameters from polarimetric images which will be used for the analysis of Liverpool Telescope (LT) Ringo3 polarimeter data. This method is very useful for the LT/Ringo data because Ringo3 for each color (red, green and blue) gives 8 images that corresponds to 8 different orientations of the retarder plate;
- I took part in the scheduling procedure for LT of five High Mass X-ray binaries;
- I took part in the observing run of the RoboPol instrument mounted at the 1.3-m in the Skinakas Observatory;
- With the assistance of Dr. Andreas Zezas I learned the analysis of images using Chandra data analysis software – CIAO;