



STSM Scientific Report Template

Applicant and home institution : G. Bruni, MPIfR - Bonn (Germany)

Visited scientist and host institution : J.-L. Gomez, IAA - CSIS (Spain)

Dates of STSM : 14-21/03/2015

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.

The RadioAstron polarisation key science projects, is an international effort started in 2012 to exploit data from the Russian space radio-telescope RadioAstron. The collaboration, based at the MPIfR (Bonn, Germany) involve scientists from US, Russia, Germany and Spain. Data for different sources have been collected during the first observing period (July 2013 - July 2014) to study in the cm-band, at the highest angular resolution ever, details of magnetic fields collimation, and their relation with the jet launching mechanism. Data from RadioAstron and a worldwide network of ground telescopes are correlated in Bonn by G. Bruni, and analysis is carried out between Bonn and Granada, together with J.-L. Gomez.

The aim of this mission was to boost the reduction and analysis of the first collected data, in order to finalise the respective publications. The host is an expert in analysis of VLBI polarisation data, thus the close interaction was meant to be useful to bring back the knowledge to the home institution.

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

During this STSM, we carried out a detailed analysis of data from two sources (BLLac and 3C273), in order to estimate the residual acceleration terms due to spacecraft. The results were used to optimize the correlation window, improving the detection of ground-space fringes. This allowed us to conclude the analysis of two among the slots from the first observing period, and define the best pursued method for the analysis of these complex space-VLBI data. Two papers will be published, one for each source (J.-L. Gomez et al. 2015; G. Bruni et al. 2015), maximizing the output of the visit.

Results will also be presented at the next COST-polarisation conference in Strasbourg (May 2015).