STSM Scientific Report

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Purpose of the STSM

We started a new, combined observational and modeling project focusing on the broad emission lines in Active Galactic Nuclei. An important goal of our work is to test the Keplerian motion of accreting material and to thereby constrain the mass of supermassive black holes in nearby and/or bright Active Galactic Nuclei.
The purpose of the STSM was to visit Strasbourg Observatory for 15 days (11. 5. – 25. 5. 2015) in order to attend the 2nd COST Workshop on Polarization and Active Galactic Nuclei, and to start modeling of polarization in broad lines.

Description of the Work Carried Out During the STSM

I was introduced by René Goosmann to the modeling scheme of STOKES and we did preliminary modeling adjusted to the polarization observations of MRK 6.
We selected a number of AGNs from the SDSS (Sloan Digitak Sky Survey) DR 9 (Data Release). Selection criteria were:

- Spectrum with broad emission lines.
- Apparent magnitude in each SDSS filter (*u, g, r, i, z*) is less than 16.6.
- Objects that can be observed from SAO [1] (we took circumpolar objects only).

We defined the preliminary title for my PhD thesis: "Measuring Black Hole Masses in AGN using Polarization in Broad Line Profiles".

Description of the Main Results Obtained

Our simplest models show the swing in polarisation angle when Keplerian motion is present. We plan to present our first results as a poster at the 10th Serbian Conference on Spectral Line Shapes in Astrophysics, June 15-19, 2015.

[1] Special Astrophysical Observatory of the Russian Academy of Science, 43.6468° N, 41.4404° E

Future Collaboration With Host Institution

The STSM will be followed by a co-directed thesis project. During the next three years, starting in February or March 2016, I would spend 4-6 months each year at the Strasbourg observatory working on the related subject. I would like to emphasyze that my stay in Strasbourg helped also to discuss the strategy and to prepare for the co-tutelle thesis project.