Report of the STSM trip to Heidelberg, Germany, 20.-25.5.2012

Kari Nilsson

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The purpose of the trip was to finalize the analysis and start writing the second publication of our polarization study of 182 BL Lac candidates discovered by [1] together with Jochen Heidt in Heidelberg. The polarization measurements were published in [2] by us and the aim of present analysis was to determine the effect of host galaxy dilution onto the measured values and to produce the final list of pure BL Lacs based on our polarization, host galaxy, variability and NIR measurements.

In the discussions with J. Heidt and D. Kügler (PhD student of J. Heidt) the contents of the second paper were first outlined. It was quickly decided that the material warrants two papers instead of one. In the second paper we would concentrate on the results of polarimetry, host galaxies, variability and NIR measurements and the third paper would be committed to making the final division onto genuine BL Lacs and contaminating targets. It was also decided that the authors of Paper II and III would be D. Kügler and K. Nilsson, respectively.

An important part of Paper II is correcting the measured polarization values for host galaxy dilution using two-dimensional core – host galaxy decomposition results derived by us from the data. It was found that this correction has a significant effect on the average polarization properties of our sample targets, but our conclusion in paper I that there is no difference in polarization properties of low peaked BL Lacs (LBL) and high peaked BL Lacs (HBL) remains unchanged. However, this result may be affected by low number statistics and simulations were deemed necessary to investigate this further. Writing of the simulation code was started immediately.

At the time of writing this report the simulations have been completed, the analysis is finished and the paper mostly written. The paper will be submitted in the near future. The visit can be considered a success, a clear view of the work ahead was achieved and both analysis and writing of the second paper took a big step ahead due to the possibility of discussing the matters efficiently. Furthermore, D. Kügler was more strongly involved in the project and is able to write his first paper as the first author.

References

[1] Collinge, M. J. et al. (2005), AJ 129, 2542.

[2] Heidt, J., Nilsson, K. (2011), A&A, 529, 162.