

COST Action MP1104
Short Term Scientific Mission

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Host: Stefano Bagnulo, Armagh Observatory (United Kingdom)

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SCIENTIFIC REPORT

The main goals of this mission were analysis of available polarimetric observations of transneptunian objects (TNOs), an exchange in experience of polarimetric technique application to study small Solar system bodies, and discussion on joint observational plans. Initially, we also planned to work on the revised version of the paper on polarimetry of transneptunian objects (136472) Makemake and (90482) Orcus. However, the manuscript sent to A&A was accepted after minor revision and published on-line on Nov 07 [1].

During my visit Dr. G.P. Tozzi (Firenze, Italy), one more member of our international team on polarimetry of TNOs, also visited the Armagh Observatory. We had very productive discussions inside our small group, including Dr. S. Bagnulo, his PhD student A. Stinson and Dr. G.P. Tozzi. We discussed the contents of the next 3 papers, which will be devoted to (1) analysis of results on our joint observational program on asteroid polarimetry (first author is I. Belskaya), (2) modelling of TNOs polarimetry (led by K. Muinonen and A. Stinson), and (3) search for coma in Centaurs by analyzing polarimetric images (first author is G.P. Tozzi). I have started to write the paper on asteroid polarimetry and plan to complete the first draft to the end of December.

The important part of our discussion was devoted to problems with modelling of polarimetric observations of TNOs. We discussed available numerical models and tested simple analytic functions. We have decided to organize a workshop on polarimetry next year joined together experts in modeling and observations. The main aim of this workshop is to strengthen our community, and to create a link between people interested in polarimetry of the objects of our solar system and people interested in polarimetry of exoplanets which seems relatively weak so far.

In the discussion of our future observational plans we defined higher-priority targets for the next application for the VLT observing time (March 2013). We also outlined targets and tasks for polarimetric observations at smaller size telescopes.

I made the presentation “Surface properties of small Solar system bodies from photometric and polarimetric phase curves” at the seminar of the Armagh Observatory.

Reference

1. Belskaya I. N., Bagnulo S., Stinson A., Tozzi G. P., Muinonen K., Shkuratov Yu. G., Barucci M. A., Fornasier S. Polarimetry of trans-Neptunian objects (136472) Makemake and (90482) Orcus. *Astronomy & Astrophysics*, Volume 547, id.A101, 5 pp., 2012.