Report of the activities carried out by Dr. A. Cellino during his COST-funded visit to the Armagh Observatory (October 22-29, 2014)

During his visit, A. Cellino worked with Dr. S. Bagnulo on a number of topics of common interest, related to the general subject of polarimetric studies of small Solar System bodies.

In particular, the main subjects of the work were the following:

1. Development of a program (in FORTRAN) aimed at implementing a computation of the loss of flux due to the interplay of the seeing conditions and the width of the adopted slit in spectro-polarimetric observations of asteroids, being given the Point Spread Function of the telescope. This program implements the approach described by Patat et al. (Astronomy & Astrophysics, 527, A91, 14, 2011). This piece of software is an important tool for an optimal reduction of spectro-polarimetric data of asteroids that A. Cellino and S. Bagnulo are currently obtaining in a number of approved observing runs at the ESO VLT and at the WHT.

2. Preparation of a list of targets and corresponding priorities for the next, imminent observing run of spectro-polarimetry at the WHT, to be carried out at the beginning of November, 2014.

3. Assistance to the polarimetric observations to be carried out in remote observing mode at the 2.15 m telescope of the Complejo Astronomico El Leoncito (CASLEO, Argentina), in the framework of a scientific program aimed at the identification and physical characterization of so-called Barbarian asteroids.

4. Preparation of a first draft of a poster about advances in the understanding of Barbarian asteroids, to be presented by Dr. Cellino and Dr. Bagnulo on December 2014 at the IAU Symposium 305 (*Polarimetry: From Sun to Stars and Stellar Environments*.

In addition, Dr. Cellino gave a long seminar, mainly conceived for the profit of several students present at the Armagh Observatory, about the determination of the physical properties of the asteroids, and about the role that is expected to be played in this context by the Gaia space mission of the ESA.

The activities mentioned above were made possible and much more efficient by the possibility to have a direct meeting of the two researchers, taking profit of the European funds made available by the COST contract.