

ACROSS: A Collaborative Research for Occultations by NEAs

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Abstract

The ACROSS Project is driven by the breakthroughs in occultations brought thanks to the Gaia catalogues. It is now possible to start planning on a consistent basis events by Near Earth Asteroids (NEA). We've already seen that through the past few years campaigns featuring occultations by (3 200) Phaethon and (99 942) Apophis.

The ACROSS project provides mainly support to the Hera mission targets. It will focus at first on the binary asteroid (65 803) Didymos, soon to be hit by the DART spacecraft, and 9 potential Hera flyby targets. It will, nonetheless, also include other NEAs, especially once the astrometric data of Gaia's DR3 is available, depending on their size and overall orbital quality.

Besides the occultation-derived astrometry mentioned above, we aim at measuring the sizes and shapes of these objects. Furthermore, in the case of Didymos, we keep are also planning for the possibility of measuring, through stellar occultations, the optical depth of the plume due to the DART impact.

Also in the framework of the ACROSS collaboration we have access to several telescopes, that will be used for the astrometric followup of the targets, with special focus on Didymos around the time of the DART impact. Our predictions for these events will be made publicly available, and we will pursue any and all collaborations with professional and amateur astronomers in the field of stellar occultations who are equipped to deal with short duration events.