ID de Contribution: **10** Type: **Oral presentation**

NAROO-AST : PRECOVERY OBSERVATIONS AND IMPACT PREDICTIONS OF NEAR EARTH ASTEROIDS

vendredi 12 février 2021 16:30 (15 minutes)

Near Earth Asteroids represent a real danger for the Earth. An impact of a Potentially Hazardous Asteroid could have catastrophic consequences. The knowledge of the actual dynamic of Potential Hazardous Asteroids is essential for the purpose of an international program of planetary defense. In this respect, accurate astrometric measurements acquired over a large time span are crucial to provide reliable orbits and impact predictions and to detect small accelerations such as Yarkovsky effect. This in particular includes precovery observations. The NAROO digitization centre (1)(2) is dedicated to the digitization and the analysis of old astronomical observations on astrophotographic plates. Digitizations are made with a high precision digitizer composed of high-resolution camera and a plate holder mounted on an air cushion table moving on granite based out of vibrations. Glass plates up to 35 cm wide can be digitized. The resulting digitization has an accuracy better than 65 nm for the measurements. Astrophotographic plates constitute a source of old observations of solar system objects including Potential Hazardous Asteroids. Some of these old observations are precovery observations of these objects. The existing databases gather all the metadata of the past observations such as date, hour, right ascension, declination and exposure which are essential to retrieve all the objects present in the observation. New orbit solutions of a selection of Potential Hazardous Asteroids were done from their positions on astrophotographic plates, thanks to the identification of their old and/or precovery observations among databases and to their new reduction with Gaia catalog. It shows an improvement of the accuracy of their new ephemeris 2 to 10 times better depending on the asteroid hence the interest of using these old observations. Next step will be not only to detect and to quantify small perturbations affecting asteroids such as Yarkovsky effect but also to refine accurate impact predictions thanks to these new orbital solutions.

(1) The NAROO digitization centre, V. Robert et al., upcoming paper
(2) NAROO webpage : https://omekas.obspm.fr/s/naroo-project/page/home

Field

Planetology (including small bodies and exoplanets)

Day constaints

Not available on the 2021/02/10 and on the 2021/02/11.

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Classification de Session: Talk

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