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### **EXPLOITING GAIA ASTEROID ALERTS**

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### **ABSTRACT**

The Gaia mission has been designed for the global objectives of mapping our Galaxy, and a first data release has already been published (Gaia Collaboration, Prusti et al., A&A 595, A1, 2016). Yet Gaia is also an interesting tool for the detection and high accuracy positioning of NEOs and other Solar System Objects. This telescope satellite, located at L2, is operating since July 2014 and since this starting date has cumulated a huge amount of astrometric data. The observing mode is constrained by a scanning law, which makes it impossible to have an internal follow-up after the detection of a new object. This is the reason why the DPAC consortium in charge of the data processing and analysis has set up a specific task dedicated to the daily processing of Solar System Object (SSO) data and the triggering of scientific alerts when a new moving object is detected. Even if Gaia was not optimised for the detection of SSO, it is important to note that NEO detection is possible in particular inside the terrestrial orbit (down to 45° Solar elongation).

In order to ensure a ground-based follow-up of these newly discovered objects, we had previously solicited observers who were associated in the Gaia Follow-Up Network for SSO (Gaia-FUN-SSO). This allowed us, through a training campaign, to provide 2732 new observation (over a total of almost 4500 in the MPC database) of (99 942) Apophis (Thuillot W. et al. A&A 583, 59, 2015). The discrimination of moving objects signal in the huge amount of Gaia data was a difficulty to overcome in order to provide reliable alerts to the observers. But since October 2016 this was done and the short term processing of SSO data is now fully operating on a daily basis. Alerts have been validated and they are continuously triggered. The Gaia-FUN-SSO network can be extended through registrations at <https://gaiafunssso.imcce.fr>. Any observer can access to the data through this web page; geocentric data are provided without registration, and dedicated topocentric data for registered users. Therefore several new asteroid candidates were recovered by ground-based telescopes, and this communication will give some details about this activity.

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