

Strategy for NEO follow-up observations

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Abstract. The Near-Earth Objects (NEOs) belong to the most important small bodies in the solar system, having the capability of close approaches to the Earth and even possibility to collide with the Earth. In fact, it is impossible to calculate reliable orbit of an object from a single night observations. Therefore it is necessary to extend astrometry dataset by early follow-up astrometry. Follow-up observations of the newly discovered NEO candidate should be done over an arc of several hours after the discovery and should be repeated over several following nights. The basic service used for planning of the follow-up observations is the NEO Confirmation Page (NEOCP) maintained by the Minor Planet Center of the IAU. This service provides on-line tool for calculating geocentric and topocentric ephemerides and sky-plane uncertainty maps of these objects at the specific date and time. Uncertainty map is one of the most important information used for planning of follow-up observation strategy for given time, indicating also the estimated distance of the newly discovered object and including possibility of the impact. Moreover, observatories dealing with NEO follow-up regularly have prepared their special tools and systems for follow-up work. The system and strategy for the NEO follow-up observation used at the Klet Observatory are described here. Methods and techniques used at the Klet NEO follow-up CCD astrometric programme, using 1.06-m and 0.57-m telescopes, are also discussed.

Keywords. NEO, follow-up, astrometry, observations

1. FUTURE PLANS FOR NEO ACTIVITIES

The International Astronomical Union is just been preparing Resolution B3 of the GA IAU in Beijing (2012) on the establishment of an International NEO early warning system. It could say that there is now ample evidence that the probability of catastrophic impacts of Near-Earth Objects (NEOs) onto the Earth, potentially highly destructive to life, and for humankind in particular, is not negligible and that appropriate actions are being developed to avoid such catastrophes. Because NEOs are a threat to all nations on Earth, all nations should contribute to avert this threat. The IAU has been working in close cooperation with the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and the International Council for Science (ICSU) to coordinate and collaborate on the establishment of an International NEO early warning system.

Also, since January 2009, the European Space Agency (ESA) has been preparing its so-called Space Situational Awareness(SSA) programme.

The main idea of the KLENOT NEXT GENERATION PROJECT is to take active part in these initiatives and to work as a dedicated NEO follow-up station in close world-wide cooperation with the highest priority given to PHAs and VIs.

References

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