

# Ground-based observations of near-Earth asteroid mission targets

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We report the results of multi-band photometry and lightcurve observation of the candidates of next generation asteroidal mission targets using Kiso observatory's 1-m telescope and Lulin observatory's 1-m Telescope since September 2003.

Japan Aerospace Exploration Agency (JAXA), Institute of Space and Astronautical Science (ISAS) has been planning the next generation minor body exploration in succession to HAYABUSA (MUSES-C) mission. HAYABUSA, a Japanese engineering demonstration spacecraft launched on 9 May 2003, was designed to acquire samples from the surface of asteroid 25143 Itokawa (1998 SF36) and return them to earth. The spacecraft arrived at distance of about 20 km from the asteroid on 12 September 2005 and successfully carried out the scientific observations.

The purpose of the present study is to obtain the taxonomic properties and rotational status of the candidate targets for the next mission. For the selection of mission target it must be needed these information. These candidate objects are considered nearly Earth-crossing asteroids which are dynamically accessible objects by spacecraft. Although spectroscopy provides more detailed spectra of asteroidal surfaces, we had performed the BVRI multi-band photometry because these objects commonly would have faint brightness (typical apparent magnitude is  $> 18$  mag.) due to these sizes.

We determined the taxonomic type and rotational period of 11 unknown objects and 3 known objects. Fortunately, we found that 65803 Didymos, one of the observed objects, would be binary asteroid which consists of double components with a satellite.