

## Polarimetric observation result of (3200) Phaethon in 2016 autumn

\*Takashi Ito<sup>1</sup>, MASATERU ISHIGURO<sup>2</sup>, Tomoko Arai<sup>3</sup>, Masataka Imai<sup>4</sup>, Tomohiko Sekiguchi<sup>5</sup>, Yoonsoo P. Bach<sup>2</sup>, Yuna G. Kwon<sup>2</sup>, Masanori Kobayashi<sup>3</sup>, Ryo Ishimaru<sup>3</sup>, Hiroyuki Naito<sup>6</sup>, Makoto Watanabe<sup>7</sup>, Kiyoshi Kuramoto<sup>4</sup>

1. National Astronomical Observatory of Japan, 2. Department of Astronomy, Seoul National University, 3. Planetary Exploration Research Center, Chiba Institute of Technology, 4. Department of CosmoSciences, Graduate School of Science, Hokkaido University, 5. Asahikawa Campus, Hokkaido University of Education, 6. Nayoro Observatory, 7. Department Applied Physics, Okayama University of Science

A near-Earth asteroid (3200) Phaethon is known to be the parent body of the Geminid meteor stream. It is an active asteroid that ejects dust when it passes its perihelion, and its spectrum is substantially blue. We conducted a series of polarimetric observation of this asteroid over a wide range of solar phase angle during its close approach to the Earth from 2016 September to November at Nayoro Observatory. Our observation revealed that this asteroid has a very large linear polarization degree. This is interesting because the geometric albedo of this asteroid is not quite low. The strong polarization of Phaethon suggests that the surface grains that effectively work on the light scattering are coarse. Several laboratory experiments tell us that dominance of the coarse grain particles on this asteroid is consistent with its very blue spectrum. This surface state can be created by the grain coarsening effect due to extensive heating (sintering) near at perihelion, and/or by the removal of finer grains by strong solar radiation.

Keywords: asteroid, Phaethon, polarization