

Comet Pan-STARRS' reflective properties provide size estimation

25 March 2016

Astronomers at the Planetary Science Institute made observations of Comet Pan-STARRS (P/2016 BA14) using the NASA Infrared Telescope Facility (IRTF) on Mauna Kea, Hawai'i that show that it reflects less than 3 percent of the sunlight that falls on its surface. For comparison, fresh asphalt reflects about 4 percent of the light that falls on it.

Provided by Planetary Science Institute

Comet Pan-STARRS made a close flyby of the Earth at a distance of 3.6 million kilometers (2.2 million miles) on March 22. This is one of the closest flybys of a comet in recorded history and the last one to come closer was Lexell's comet that flew by the Earth at a distance of 2.2 million kilometers (1.4 million miles) on July 1, 1770.

"We measured the spectral and thermal [properties](#) of the comet using the NASA IRTF and found that the comet reflects between 2-3 percent of the sunlight that falls on it," said Vishnu Reddy, research scientist at the Planetary Science Institute in Tucson, Arizona. "This is typical for comets," Reddy added. Based on its reflective properties, Reddy estimates the size of the comet to be between 600 meters and 1.2 kilometers (0.4 miles and 0.75 miles) in diameter.

Comet Pan-STARRS was originally discovered as an asteroid and later found to have cometary properties when astronomers realized its orbit is similar to another short period [comet](#) 252P/LINEAR, which also made a [close flyby](#) of the Earth at 5.3 million kilometers (3.3 million miles) on March 21.

"It is an extremely rare opportunity to be able to study a pair of comets with historically close flybys. Measuring the physical properties of both comets will help us understand the evolution of comets in general," said Jian-Yang Li, Senior Scientist at PSI. Li was observing 252P/LINEAR with the Hubble Space Telescope during its close encounter.

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