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Isaac Newton Group of Telescopes

The Isaac Newton Group of Telescopes is an establishment of the Particle Physics and Astronomy Research Council (PPARC) of the United Kingdom, the Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO) of the Netherlands and the Instituto de Astrofísica de Canarias (IAC) in Spain

MEDIA RELEASE

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A SHARPER LOOK AT NEAR EARTH ASTEROID 2002 NY40

The Near Earth Asteroid 2002 NY40 was observed with the William Herschel Telescope on La Palma, Canary Islands, on the night of August 17 to 18, 2002. The asteroid was imaged just before its closest approach to Earth, using the Adaptive Optics system NAOMI. These are the first images of a Near Earth Asteroid obtained with an Adaptive Optics system.

During these observations the asteroid was 750,000 kilometres away, twice the distance to the Moon, and moving very rapidly across the sky (crossing a distance similar to the diameter of the Moon in 6 minutes or at 65,000 kilometres per hour). Despite the technical difficulties introduced by this, very high quality images were obtained in the near-infrared with a resolution of 0.11 arcseconds. This resolution is close to the theoretical limit of the telescope, and sets an upper limit to the size of the asteroid: only 400 metres across at the time of the observations.

Measuring the size of asteroids helps astronomers understand their nature and formation history as well as the potential threat they pose.

Near Earth Asteroids are a small population of asteroids that periodically approach or intersect the orbit of our planet, and have the possibility of colliding with the Earth as probably happened 65 million years ago, ending the dinosaur era. However, the probability that such an impact could happen is very low and in particular Near Earth Asteroid 2002 NY40 represents no danger to human live on Earth.

Close encounters of large Near Earth Asteroids such as 2002 NY40 on August 18 happen approximately every 50 years. The last known case was NEA 2001 CU11 which passed just outside the Moon's orbit on August 31, 1925. Nobody saw that approach because that asteroid was not discovered until 77 years later. 2002 NY40 was discovered on July 14,

2002 by the LINEAR telescope in New Mexico (USA), providing a unique opportunity to obtain observations of the asteroid from the Earth during its flyby.

Several observers have reported variations in the brightness of 2002 NY40, suggesting that it is highly elongated and tumbling. Further monitoring of these variations will tell us whether we viewed the asteroid end-on or side-on, and thus allow us to determine more precisely the size and shape.

NAOMI is the WHT's Adaptive Optics system, built by a team from the University of Durham and the Astronomy Technology Centre, UK. It incorporates a system of fast-moving mirror elements which correct in real-time for the defocusing of stars caused by the Earth's turbulent atmosphere. In good conditions, NAOMI delivers images as sharp as those from Hubble Space Telescope.

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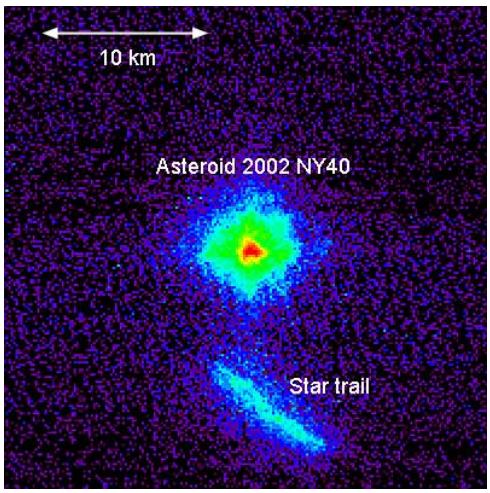
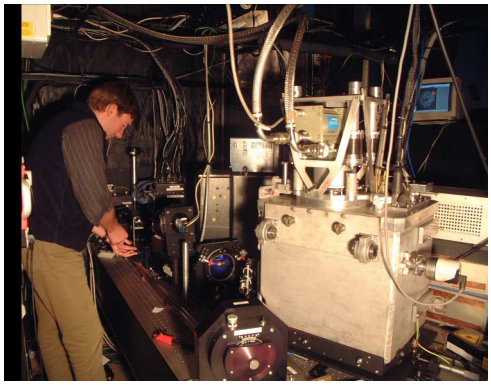
The ING NAOMI team consists of Dr. Chris Benn, Dr. Sebastian Els, Dr. Tom Gregory, Dr. Roy Østensen and Dr. Francisco Prada.

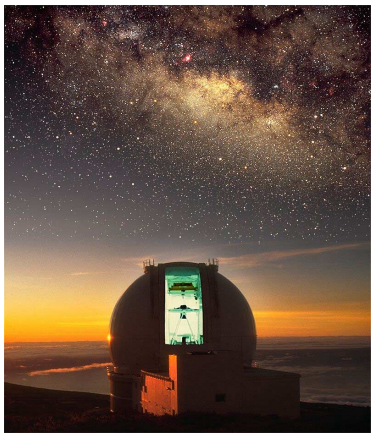
PICTURES AND MOVIES



Caption: Movie and images of asteroid 2002 NY40 on the night of August 17 to 18.
Picture credit: The ING NAOMI team.
Downloadable from http://www.ing.iac.es/PR/press/ing32002.html



Caption: The NAOMI Adaptive Optics system at the Nasmyth focus of the William Herschel Telescope.
Picture credit: The NAOMI team.
Downloadable from http://www.ing.iac.es/PR/press/ing32002.html



Caption: Composite picture showing the William Herschel Telescope (WHT) with the Milky Way in the background. The WHT is the most powerful optical/infrared telescope in Europe.
Picture credit: Nik Szymanek and Ian King.
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