space situational awareness

→ NEAR-EARTH OBJECTS

Current NEO statistics

About 4% of the known NEO population is in the risk list. This value has remained roughly constant over the past years even if the discovery rate has increased.

- Known NEOs: 18 210 asteroids and 107 comets
- NEOs in risk list*: 741
- Number of NEOs designated during last month: 125
- NEOs discovered since 1 January 2018: 754

Focus on

On 22 May 2018 the Catalina Sky Survey in Arizona discovered 2018 KW1, a new asteroid in an incoming trajectory. It was going to have a very close approach to Earth about a day later, and become unobservable just after that. Thanks to the quick alert systems now available for such fly-bys, a team of astronomers at the Lowell Observatory was able to get a physical characterisation of the asteroid within a few hours of discovery. The object turned out to have a rotational period of about 10.8 seconds, the shortest ever observed. From its spectrum it was also possible to infer that it must be extremely small, only 2 to 3 meters in diameter. This example shows that it is now possible to characterise an object of this size with such a short advance notice. In case this object had been in a collision course with Earth, this type of information would have been essential in order to organise mitigation activities on the ground.

Upcoming interesting close approaches

Two large objects will become bright during their close approach in June.

- 2017 YE5 is a ~ 600 metre object that will fly-by on 21 June at 16 lunar distances, reaching a peak brightness of about magnitude 15 .
- (467309) 1996 AW1, is an object of about 400 meters, which will have a close approach to Earth on 23 June at 18 lunar distances, reaching magnitude 16.

Recent interesting close approaches

An asteroid was detected in June some hours before entering the Earth's atmosphere.

- Asteroid 2018 LA, a 2-5 m object, was identified to impact Earth on Saturday 2 June. It had been discovered only eight hours before by Catalina Sky Survey. This is the third case that an asteroid could be detected prior to falling to the ground.
- 2010 WC9 is a ~ 80 metre object, which flew past the Earth in mid-May at 0.5 lunar distances, reaching a peak brightness of magnitude 11.

News from the risk list

An object went out of the top-10 positions in our risk list thanks to follow-up.

- After reaching a Palermo Scale value of –3.8 during the month of March, putting it in the top-10 of our risk list, asteroid 2018 HJ2 has now dropped to much lower levels thanks to extensive follow-up observations by various telescopes.

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* The risk list of all known objects with a non-zero (although usually very low) impact probability can be found at http://neo.ssa.esa.int/web/guest/risk-page

European Space Agency

In other news

- This year, for the Asteroid Day celebrations on 30 June, ESA will join ESO in Garching, near Munich, Germany for a day of asteroid-themed activities at the newly inaugurated ESO Supernova Centre. More information is available at https://supernova.eso.org/programme/detail/es1053/

Upcoming events

Relevant international meetings over the next months.

- Didymos Observer Workshop 2018, 19–21 June 2018, Prague, Czech Republic
  http://didymos2018-mtg.asu.cas.cz/
- COSPAR 2018: "The Golden Age of Small Bodies, Science and Exploration", 14–22 July 2018, Pasadena, USA
  https://www.cospar-assembly.org/admin/session_cospar.php?session=680
- Asteroids and comets—inside out workshop, 4–6 September 2018, Tampere, Finland
  http://www.tut.fi/en/asteroids-and-comets-inside-out-workshop/
- European Planetary Science Congress, 16–21 September 2018, Berlin, Germany
  http://www.epsc2018.eu/
- AAS Division for Planetary Sciences Meeting, 21–26 October 2018, Knoxville, USA
  https://aas.org/meetings/dps50

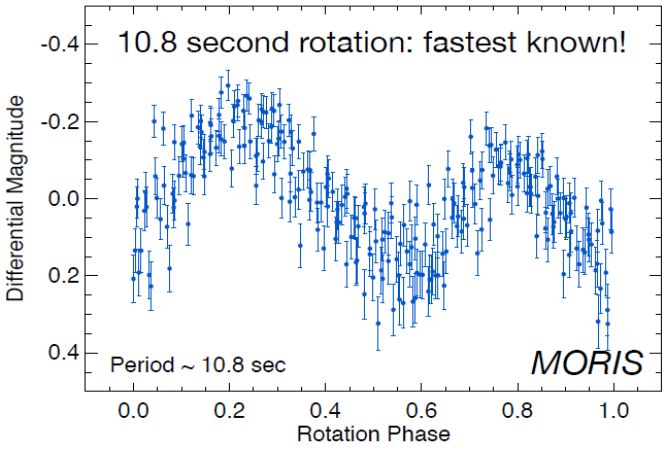
Earliest discovered NEOs in risk list

List of the objects discovered more than 20 years ago and currently in risk list.

Object name	Size range in m	Date of possible impact	Impact probability	Palermo Scale	Velocity in km/s	Date of last observation
(29075) 1950 DA	2000	2880-03-16	1/7000	−1.36	18.0	2018-02-09
1979 XB	500–1200	2113-12-14	1/1800000	−3.28	26.0	1979-12-15
1991 BA	5–11	2023-01-18	1/400000	−6.87	22.0	1991-01-18
1993 KA2	4–9	2060-11-10	1/40000000	−9.30	25.8	1993-05-22
1993 UA	22–50	2111-10-21	1/1900000	−6.93	14.6	1993-10-24
1994 ES1	5–11	2044-10-02	1/240000000	−9.90	21.7	1994-03-15
1994 GK	40–90	2061-04-03	1/220000	−5.01	18.6	1994-04-10
1994 GV	9–20	2065-04-10	1/40000	−5.95	13.8	1994-04-15
1995 CS	21–50	2042-02-03	1/300000	−5.35	27.8	1995-02-07
1996 TC1	40–100	2067-09-26	1/1000000	−5.31	26.5	1996-10-11
1997 UA11	24–50	2073-10-24	1/2000000	−6.58	16.4	1997-11-08

Links for more information

Website: http://neo.ssa.esa.int
Close approaches: http://neo.ssa.esa.int/close-approaches
Risk List: http://neo.ssa.esa.int/risk-page



Lightcurve of 2018 KW1 obtained with the NASA Infrared Telescope Facility (IRTF) on 23 May 2018, just a few hours after discovery. The full period is just 10.8 s, the shortest ever measured for an NEO.

[Credit: N. Moskovitz, B. Burt, M. Mommert, A. McNeill]