

→ NEWSLETTER NOVEMBER 2022

ESA's NEO Coordination Centre

Current NEO statistics

As expected, the large number of new discoveries that typically characterise the northern hemisphere fall pushed the total number of known NEAs above 30 000 during the early days of October.

- Known NEOs: 30 403 asteroids and 117 comets
- NEOs in risk list*: 1457
- NEOs designated during last month: 448
- NEOs discovered since 1 January 2022: 2581

Focus on

The International Asteroid Warning Network (IAWN) is organising a second timing campaign, targeting the upcoming close approacher 2005 LW3. The goal of the campaign is to provide an incentive to NEO observers to check the accuracy of the timing of the astrometric observations they report to the Minor Planet Center. The target will be easily observable from most of the planet as a bright fast-moving source on the nights of 23-24 November 2022, during its close approach at about 3 lunar distances. The fast angular motion on the plane of the sky, together with the excellent knowledge we already have of this object's trajectory, will allow the campaign team to carefully assess the accuracy of the timetags reported by each station. These checks are extremely important to detect possible subtle time biases that are often present even at telescopes that synchronise their system time with extreme accuracy. We therefore recommend any observer interested or routinely involved in NEO observations to join the exercise, reporting their intention to participate on the [webpage](#) dedicated to the campaign.

Upcoming interesting close approaches

The IAWN campaign target is the most notable close approacher for the month of November known so far.

- 2005 LW3, the target of the IAWN campaign discussed above, will reach magnitude 13 during its upcoming fly-by.

Recent interesting close approaches

A few objects came close during the month of October.

- 2022 UR4 is a newly discovered asteroid of roughly 5 metres that came to about 10 000 km from the Earth surface on 20 October. It was first discovered by the ATLAS survey and subsequently re-discovered by Krisztián Sárneczky a few hours later. Each individual arc suggested the possibility of being an impactor, but when linked together it became evident that the object was just approaching very close.
- 2022 UW16, a similarly sized object, flew-by at about 32 000 km just nine days later.
- 2022 TM2, also a discovery of the month, only reached 200 000 km, but in this case it was a much larger Tunguska-sized object.

News from the risk list

No new objects entered or left high-rated positions in our risk list last month.

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

In other news

- Both the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG) held their semestral meetings in October.
- ESA's Planetary Defence Office has opened two internship positions at the NEOCC for students currently enrolled at a University. Interested candidates can apply following this [link](#).

Upcoming events

- Exploration of Asteroids Symposium at the 2nd International Stardust Conference, 7-11 November 2022, Noordwijk, The Netherlands
<http://www.stardust-network.eu/starcon2/>
- EC-ESA Workshop on NEO Imminent Impactors Warning Coordination, 12-14 December 2022, Darmstadt, Germany
<https://indico.esa.int/event/422/>
- 2nd ESA NEO and Debris Detection Conference, 24-26 January 2023, Darmstadt, Germany
[https://neo-sst-conference.sdo.esa.int/](https://neo-sst-conference.sdo.esoc.esa.int/)
- 8th IAA Planetary Defense Conference, 3-7 April 2023, Vienna, Austria
<https://iaaspace.org/event/8th-iaa-planetary-defense-conference-2023/>
- Asteroids, Comets, Meteors Conference, 18-23 June 2023, Flagstaff, USA
<https://www.hou.usra.edu/meetings/acm2023/>

Brightest close approaches in the next year

The table shows the list of the brightest close approaches of known NEAs in the next 12 months. It only contains objects with an estimated maximum brightness brighter than magnitude 14. 2005 LW₃ is listed as the fifth brightest.

Object name	Close approach date	Max brightness	Miss distance in lunar distances	Miss distance in km	Size range in m	H magnitude
1998 HH49	2023-10-17	12.95	3	1 167 000	150–300	21.3
(199145) 2005 YY128	2023-02-16	13.12	12	4 591 000	600–1 400	18.2
2015 RN35	2022-12-15	13.36	2	680 000	60–140	23.1
2010 XC15	2022-12-27	13.36	2	766 000	140–300	21.4
2005 LW3	2022-11-23	13.38	3	1 134 000	130–290	21.6
(488453) 1994 XD	2023-06-12	13.47	8	3 156 000	400–900	19.2
(154244) 2002 KL6	2023-08-05	13.84	25	9 509 000	800–1900	17.5
2020 DB5	2023-06-25	13.89	11	4 302 000	400–800	19.3
(525229) 2004 UU1	2023-10-30	13.99	11	4 070 000	150–300	21.2



Geometry of the upcoming close approach of 2005 LW₃, as displayed by ESA's new [Flyby Visualisation Tool](#). The guiding arrows from Earth point to the Sun (yellow), the Moon (grey) and the asteroid (blue). The orbit of 2005 LW₃ is shown in the background as a blue line as well as the point of closest approach to Earth. In this particular case, the asteroid orbit is very well known, as reflected by the barely visible uncertainty ellipsoids (yellow marks) over the object's orbit.

[Credit: ESA / PDO]

Links for more information

Website: <https://neo.ssa.esa.int>

Close approaches page: <https://neo.ssa.esa.int/close-approaches>

Risk List: <https://neo.ssa.esa.int/risk-list>

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