

ESA's NEO Coordination Centre

Current NEO statistics

As usual, the discovery rates are going down during the Northern summer, due to a combination of shorter nights and the monsoon season in the US Southwest.

- Known NEOs: 35 174 asteroids and 122 comets
- NEOs in risk list*: 1626
- NEOs designated during last month: 149
- NEOs discovered since 1 January 2024: 1162

Focus on

In the last few newsletters we discussed some unusual resonances that create interesting dynamical behaviours for objects in our Solar System. However, some very simple resonances can have interesting effects on the observability of asteroids, and 2024 MK, the close approaching asteroid better discussed below, is one such example. Before encountering the Earth a few days ago, this object was located in an almost perfect 10:3 resonance with the Earth, meaning that the object had gone around the Sun exactly 3 times during the past 10 years. This geometrical property implies that, exactly 10 years ago, a similar observational geometry must have happened, and the object should have been observable. And that was indeed the case, since precovery observations both before and after the 2014 close approach have recently been reported by Pan-STARRS.

Upcoming interesting close approaches

None of the NEOs known at the beginning of July is expected to have a notable close approach during the upcoming month.

Recent interesting close approaches

Three objects had interesting and unusual close approaches during the month of June, each with a different peculiarity.

- 2024 MK was the most prominent approach of the month. It is a moderately large asteroid, with a diameter of about 150 metres, and it was discovered by the ATLAS survey just two weeks before its approach at less than one lunar distance. Due to its significant size, and small distance, it became brighter than magnitude 9 at the time of its closest approach. Such a bright close approach is a rare and unusual occurrence, especially for a recently discovered object.
- 2024 LH1 also had a very noticeable approach in June. In this case, the relevance is due to its extremely small distance: the object flew-by less than 2000 km above the Earth surface, making it the second closest non-impacting asteroid ever observed.
- (415029) 2011 UL21, the only one of the three approachers already known in advance, is a good example of a very distant passage, only notable because of the large size of the object. It flew-by more than 17 times as far as the Moon, but being a 2 kilometre object it still reached magnitude 12 at its peak.

News from the risk list

In the last months, no NEOs entered or left the top positions of our risk list.

*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

- ESA's Hera spacecraft and its CubeSats, Milani and Juventas, successfully passed additional pre-launch checks and tests. A launch and early operations simulation campaign was performed at ESOC with all the operations team.

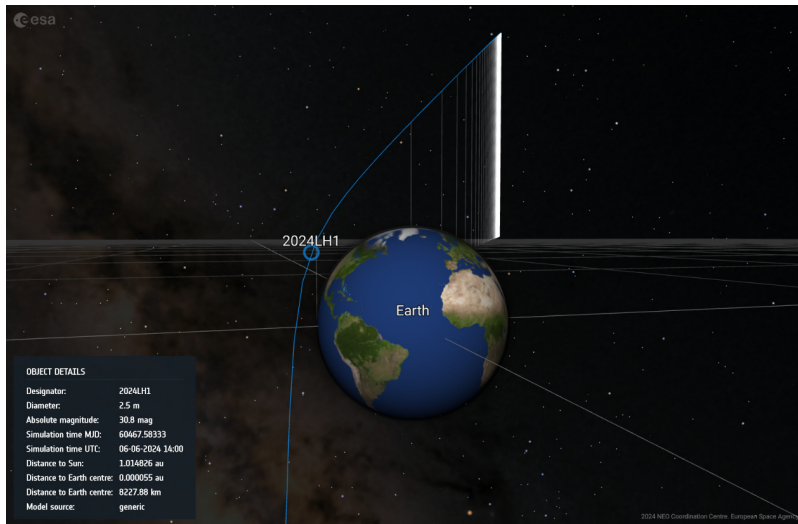
Upcoming events

- Follow-up Observations of Small Bodies in the Solar System in the Era of Large Discovery Surveys, 6 and 8 August 2024, Cape Town, South Africa
<https://sbss2024.saaao.ac.za/>
- Europlanet Science Congress (EPSC) 2024, 8-13 September 2024, Berlin, Germany
<https://www.epsc2024.eu/>
- 43rd International Meteor Conference, 19-22 September 2024, Kutná Hora, Czech Republic
<https://imc2024.imo.net/>
- 56th Annual Meeting of the AAS Division for Planetary Sciences (DPS), 6-10 October 2024, Boise, USA
<https://aas.org/meetings/dps56>

Past known closest approaches

The table shows the list of the past closest approaches of known NEAs. It contains only objects that approached within 1 Earth radius of the surface but did not impact. The recently discovered 2024 LH1 is listed in the second place.

Object name	Close approach date	Miss distance in Earth radii	Miss distance in km	Size range in m	H magnitude
2020 VT4	2020-11-13	0.06	400	5–11	28.6
2024 LH1	2024-06-06	0.27	1 700	2–4	30.8
2020 QG	2020-08-16	0.46	2 900	3–6	29.8
2021 UA1	2021-10-25	0.48	3 000	1–3	31.7
2023 BU	2023-01-27	0.56	3 600	4–8	29.3
2023 RS	2023-09-07	0.62	4 000	1–2	32.2
2011 CQ1	2011-02-04	0.86	5 500	1–2	32.1
2019 UN13	2019-10-31	0.98	6 200	1–2	32.0
2008 TS26	2008-10-09	1.00	6 400	1–1	33.3



The image shows the geometry of the extreme close approach of 2024 LH1, reconstructed with ESA's Flyby Visualisation Tool.

The blue circle shows the position of the asteroid at the time of its closest approach, which happened over North America, not far from the discovery site, the Catalina Sky Survey observatory.

[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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