

Two large asteroids safely pass Earth just 42 hours apart

June 24 2024



ASTEROID SAFE CLOSE APPROACH
#PlanetaryDefence news

esa

ID
2024 MK

Size:
120–260 m

Visible to:
Small telescopes

Closest approach distance:
~290 000 km
from Earth's surface

~0.75 lunar distances

Discovery date
2024
June
16

Date/time of close approach
29 June 2024
~13:46 UTC

Chance of impact?
0

"2024 MK was discovered just a few days ago. An asteroid this large coming so close to Earth is a rare event, but there is no chance of impact."
Richard Moissi,
ESA Planetary Defence Office

#SpaceSafety

Asteroid 2024 MK will fly past Earth on 29 June at approximately 13:45 UTC (15:45 CEST). It is between 120 and 260 m across and will pass within the orbit of the moon. Credit: European Space Agency

Two large asteroids will safely pass Earth this week, a rare occurrence perfectly timed to commemorate this year's Asteroid Day.

Neither poses any risk to our planet, but one of them was only

discovered a week ago, highlighting the need to continue improving our ability to detect potentially hazardous objects in our cosmic neighborhood.

2024 MK—less than two weeks between discovery and flyby

Asteroid 2024 MK is between 120 and 260 m in size and was discovered on 16 June 2024. The asteroid will fly past Earth on 29 June during the height of this year's Asteroid Day activities.

2024 MK is large for a near-Earth object (NEO) and will pass within 290 000 km of Earth's surface—roughly 75% of the distance between Earth and the moon.

There is no risk of 2024 MK impacting Earth. However, an asteroid this size would cause considerable damage if it did, so its discovery just one week before it flies past our planet highlights the ongoing need to improve our ability to detect and monitor potentially hazardous near-Earth objects (NEOs).

Due to its size and proximity, 2024 MK will be observable in clear dark skies on 29 June using a [small telescope](#) or good binoculars for amateur astronomers in some parts of the world. Plan your observations using [ESA's NEO toolkit](#).

(415029) 2011 UL21—larger than 99% of near-Earth asteroids

Asteroid (415029) 2011 UL21 is the larger of the week's visitors. At 2310 m across, this asteroid is larger than 99% of all known near-Earth objects (NEOs). However, it won't come anywhere near as close to

Earth. At its closest point on 27 June, it will still be more than 17 times as far away as the moon.



Asteroid (415029) 2011 UL21 will fly past Earth on 27 June, at 20:14 UTC (22:14 CEST). At 2310 m across, it is larger than 99% of all known near-Earth objects (NEOs), but it poses no risk to Earth and will pass by more than 17 times as far away as the moon. Credit: European Space Agency

This asteroid's orbit around the sun is steeply inclined, which is unusual for such a large object. Most large objects in the solar system, including planets and asteroids, orbit the sun in or close to the equatorial plane.

This could be the result of gravitational interactions with a large planet like Jupiter. Jupiter can deflect previously safe asteroids inwards towards Earth, so understanding this process is important.

(415029) 2011 UL21 is in an '11:34 resonance' with Earth. It completes 11 revolutions about the sun in almost the exact same amount of time in which Earth completes 34 revolutions (i.e. 34 years).

The result is a pleasant repeating pattern when you visualize the asteroid's location relative to Earth over a period of 34 years while keeping Earth fixed in place.

Asteroid Day 2024

The [impact craters](#) scarring Earth's surface are testament to how asteroids have greatly influenced our planet's history and development.

The UN-endorsed Asteroid Day commemorates the largest observed asteroid strike in recorded history—the 1908 airburst above Tunguska in largely deserted Siberia, which felled around 80 million trees.

This represented a lucky escape for Europe: it happened just a short rotation of Earth away from affecting the continent's more heavily populated regions.

ESA is in a unique position, with the cooperation and support of its Member States, to coordinate the data, information and expertise needed to understand and respond to asteroid hazards in Europe and participate in humankind's wider planetary defense efforts.

Over the last two decades, ESA has been performing detection and analysis of potentially hazardous NEOs. There are an estimated 5 million NEOs out there larger than 20 m—the threshold above which an impact could cause damage on the ground.

ESA ramps up asteroid activities

ESA's Planetary Defense Office is carrying out a number of projects dedicated to improving our ability to detect, track and mitigate potentially hazardous asteroids.

Launching later this year, ESA's Hera mission is part of the world's first test of asteroid deflection. Hera will perform a detailed post-impact survey of the asteroid Dimorphos following the impact of NASA's DART mission in September 2022 and help turn the experiment into a well-understood and repeatable planetary defense technique. Members of the Hera team will take part in Asteroid Day celebrations later this week.

Back on Earth, ESA is developing a network of insect-inspired Flyeye telescopes that will use their uniquely wide field of view to automatically scan the entire sky every night on the hunt for new potentially hazardous asteroids.

Our future NEOMIR satellite will be located between Earth and the sun. It will use [infrared light](#) to spot asteroids approaching our planet from regions of the sky which cannot be seen from the ground as they are obscured by the glare of our star.

Meanwhile, the Planetary Defense Office continues to keep a close eye on the sky today. ESA's fireball camera in Cáceres, Spain, captured a stunning meteor during the night of 18–19 May 2024, which is thought to have been a small piece of a comet that flew over Spain and Portugal traveling at roughly 162,000 km/h before burning up over the Atlantic Ocean.

Just a couple of weeks later, on 6 June 2024, the Catalina Sky Survey in Arizona, U.S. discovered a small asteroid 2–4 m in size that triggered an alert from ESA's imminent impact monitoring system (Meerkat).

That alert was not for an impact, but for a very close call. A few hours later, the object flew over the Catalina Sky Survey telescope that discovered it at a distance of just 1750 km, making it [the second closest pass](#) of a known, non-impacting asteroid ever.

Provided by European Space Agency

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