

→ CAFS FOR 2024 YR4

ESA's NEO Coordination Centre

Close approach fact sheet for asteroid 2024 YR4

This is a special interest event for an NEO fulfilling the IAWN and SMPAG activation criteria. The large asteroid 2024 YR4 will have a non-zero probability to impact the Earth in 2032. The estimated impact probability is: 0.012 (1.2%)

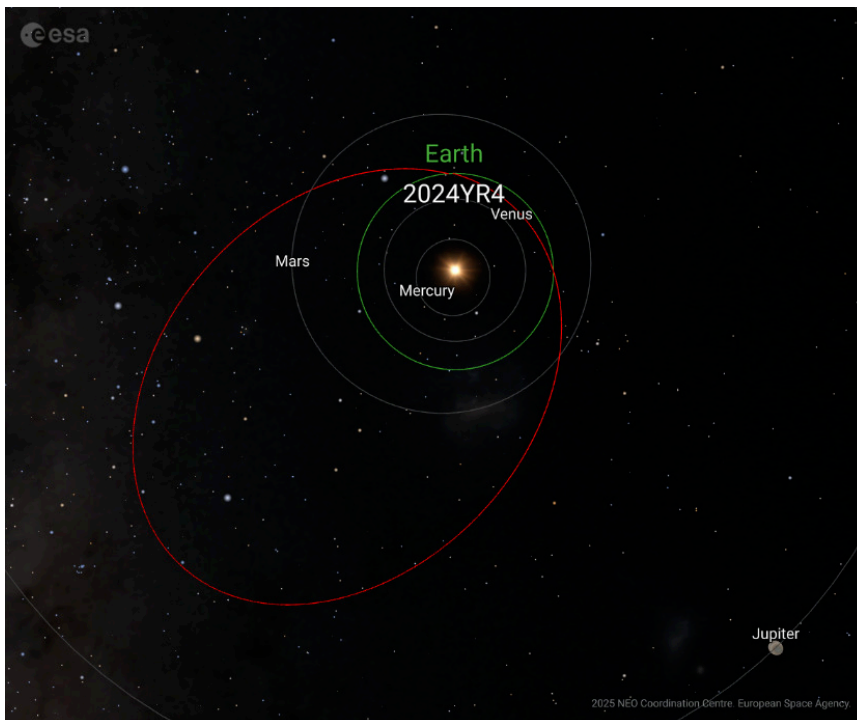
Possible impact date	2032-12-22
Possible impact time	~ 14:02 UTC ± 10 min
Velocity at entry interface point	~ 17.34 km/s
Size range	40-90 m
Discovery date	2024-12-27
Discovery site	ATLAS Chile Río Hurtado

All error bars quoted in this table correspond to one standard deviation.

Orbit information

Date before the possible impact	Orbital period (year/day)	Aphelion distance (au)	Perihelion distance (au)	Eccentricity	Inclination (deg)
2032-11-22	4.011/1468	4.180	0.870	0.656	3.428

All orbital elements in this table are referred to the ecliptic at the epoch of J2000.0



Ecliptic projection of the asteroid orbit (in red). Credit: ESA / PDO

Physical and mitigation information

Time to impact (days)	Impact probability	Composition	Rotation period (hours)
2884	0.012	Unknown	0.3244

Due to the current impact probability exceeding 1%, the IAWN criteria for activation of the network are fulfilled. Further astrometric follow-up and physical characterisation in coordination among IAWN is advised. Although size and composition have not been well determined, current estimates include possible diameters above 50 m. Therefore it is advised to check for a potential activation of SMPAG via IAWN to study the possibilities for potential space-based mitigation activities. Current compositional analysis is not conclusive to date. A spectral class of type S is likely, indicating a rocky object. But more data is needed for proper classification.

Observational information

Peak brightness	Visual observability	Geometric observability
~16	Unobservable visually at this apparition	Peak brightness reached just before discovery at the end of 2024. Currently magnitude 22.5 and receding from Earth, while remaining close to opposition.

Other information

Encounter peculiarities	Previous encounter	Next encounter
Possible impact	2024-12-25	2028-12-17

Only encounters within 0.05 au are considered.

Links

NEO information:

<https://neo.ssa.esa.int/search-for-asteroids?sum=1&des=2024YR4>

Orbit visualiser:

<https://neotools.ssa.esa.int/ovt?object=2024YR4>

Close approaches page:

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

neo.ssa.esa.int

To subscribe or to unsubscribe to this CAFS fill the form at <https://neo.ssa.esa.int/subscribe-to-services>

