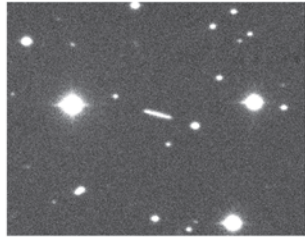


# Asteroids

Asteroids – also known as “minor planets” – are small rocky bodies that orbit the Sun along with the major planets. The first asteroid, Ceres, was found in 1801 and, as most of the others, moves in the “main belt” between the orbits of Mars and Jupiter. With ~950 km diameter, it is also the largest asteroid known there.



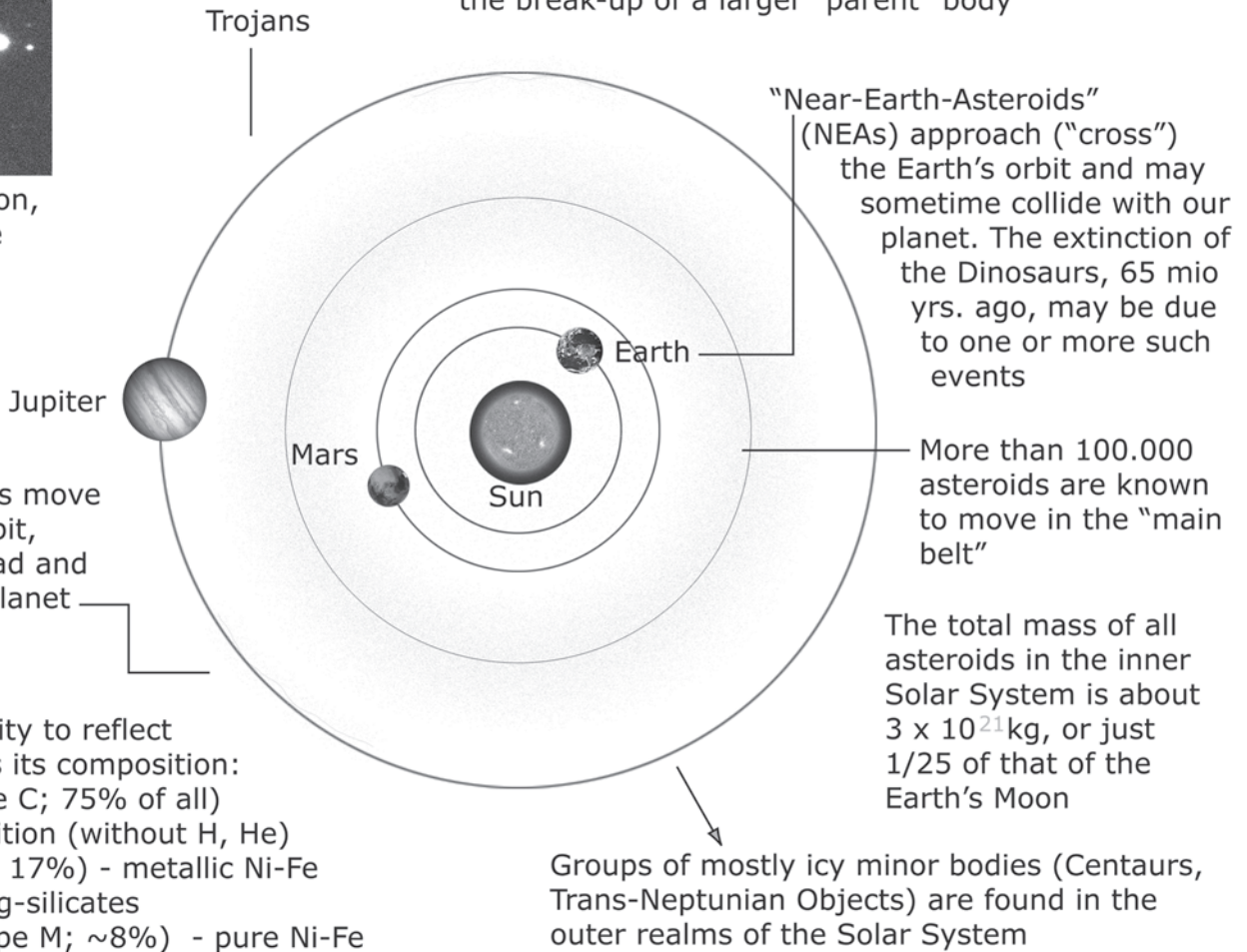
Due to their motion, asteroids produce “trails” on long-exposure photos

“Trojan” asteroids move near Jupiter’s orbit, approx. 60° ahead and 60° behind the planet

An asteroid’s ability to reflect sunlight indicates its composition:

- \* Very dark (Type C; 75% of all) - solar composition (without H, He)
- \* Bright (Type S; 17%) - metallic Ni-Fe with Fe- and Mg-silicates
- \* Very bright (Type M; ~8%) - pure Ni-Fe

Many asteroids move in similar orbits and belong to “families”. Each family probably represents the break-up of a larger “parent” body



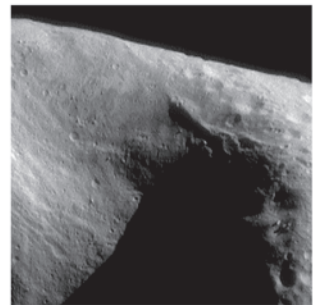
Asteroid Ceres (ground-based photo)



Asteroid Gaspra (NASA Galileo 1991)



Asteroid Ida with moon Dactyl (Galileo 1993)



Asteroid Eros (NASA NEAR 1999)

## Physical Data

Property
Distance from the Sun
Rotation period
Dimensions
Mass
Density

Ceres
414 mio km
9.074 hrs
960 x 933 km
$9.4 \times 10^{20}$ kg
2050 kg/m <sup>3</sup>

## For comparison

Gaspra
332 mio km
3.29 years
19 x 12 x 11 km
?
?

Deimos
-
1.26 days
15 x 12 x 11 km
$1.8 \times 10^{15}$ kg
1700 kg/m <sup>3</sup>