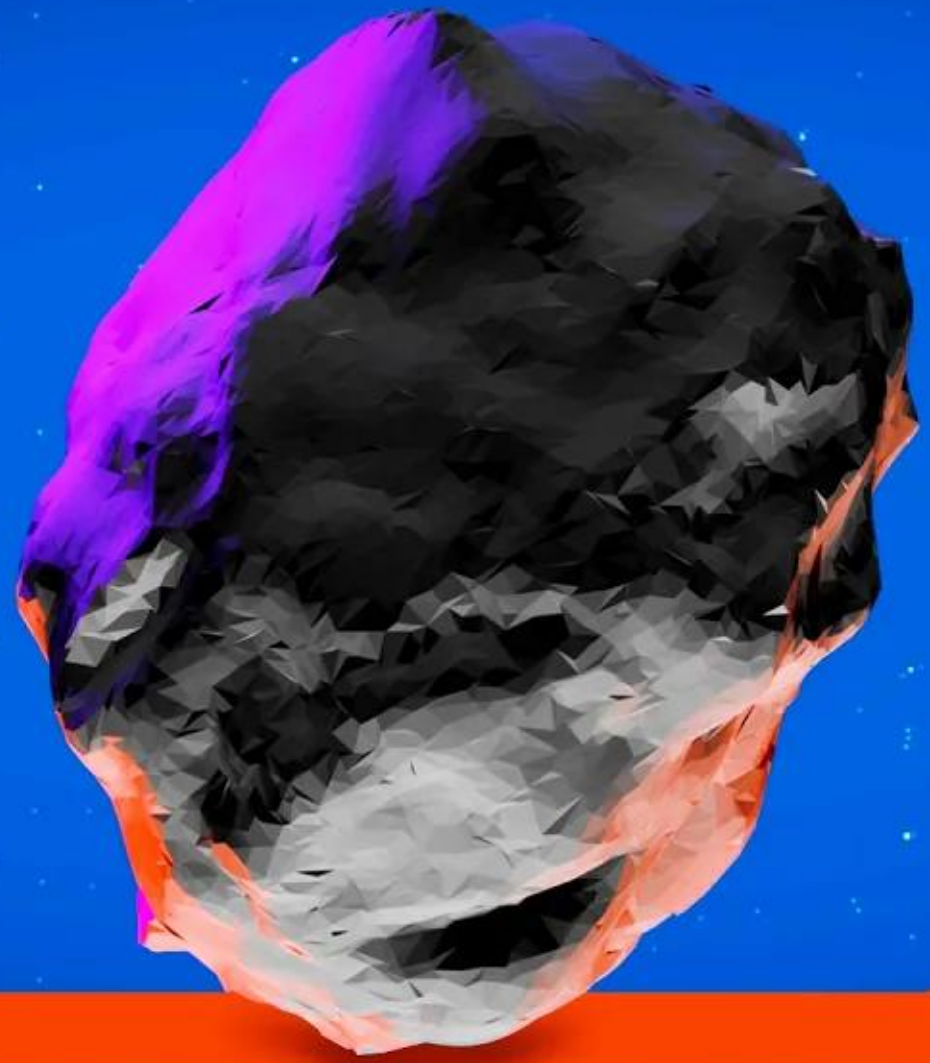

DIAMETER: 493M
ECCENTRCITY: .204
APHELION: 1.356 AU
PERIHELION: .897 AU

1
00:00:00,030 --> 00:00:05,400
[music]

2
00:00:05,420 --> 00:00:08,980
From a distance, everything in our solar system appears to be in its place.

3
00:00:09,000 --> 00:00:13,560
However, if you take a closer look, sometimes you can find asteroids, like Bennu,

4
00:00:13,580 --> 00:00:17,680
leaving their home in the inner asteroid belt and passing very close to Earth.

5
00:00:17,700 --> 00:00:24,480
Most other asteroids tend to stay grouped together in a few regions of our solar system, yet some still end up in

6
00:00:24,500 --> 00:00:30,480
So once these asteroids get close, what makes the difference between a near-miss, and a potential hit?

7
00:00:30,500 --> 00:00:34,380
NASA's OSIRIS-REx mission will help better answer this question when it visits Bennu,

8
00:00:34,400 --> 00:00:39,250
but scientists think that a force called the Yarkovsky effect might be an important part of the answer.

9
00:00:39,270 --> 00:00:46,680
So how does this effect work? Well, like Earth, most asteroids rotate slowly as they move through space.

10
00:00:46,700 --> 00:00:52,420
During the day, the surface of the asteroid is illuminated by the Sun, so it absorbs heat and grows warmer.

11
00:00:52,440 --> 00:00:57,910
During the night, however, the surface cools down, emitting the heat it absorbed as radiation.

12
00:00:57,930 --> 00:01:05,550
This radiation exerts a force on the asteroid, acting as a sort of mini-thruster that can slowly change the asteroi

13
00:01:05,570 --> 00:01:12,480

On larger asteroids this doesn't amount to much, but on small ones it can make a pretty large change over time

14
00:01:12,500 --> 00:01:15,630
Because the surface emits the most heat radiation at the end of the day,

15
00:01:15,650 --> 00:01:20,380
the direction the asteroid rotates can ultimately determine what happens in the long run.

16
00:01:20,400 --> 00:01:29,080
Other factors, such as composition, asteroid shape, and surface features, can modify the magnitude and direct

17
00:01:29,100 --> 00:01:32,830
By studying the Yarkovsky effect on Bennu with the OSIRIS-REx spacecraft,

18
00:01:32,850 --> 00:01:36,820
NASA scientists hope to better predict how an asteroid might move through the solar system,

19
00:01:36,840 --> 00:01:40,320
and whether it poses any danger to us here on Earth.