

*1: I'm David Dunham, of the international occultation timing association, talking about **NEO ORBITS AND SIZES FROM IOTA OCCULTATION OBSERVATIONS**. I thank my Japanese co-authors, especially Fumi Yoshida; they provided at least half of the new material. I will go through these slides quickly, hoping to encourage you to learn more by viewing my extended abstract and presentation available on the conference Web site. NEXT.

*2: I first talk about Phaethon. Two years ago, I gave details of the large effort for the bright 2019 July occultation in the southwestern USA, and the following occultations that allowed accurate determination of Phaethon's orbit, and of its A2 non-gravitational parameter. NEXT.

*3: The next slide shows the modern equipment and organization of the Japanese Occultation Information Network (JOIN) and their plan to found an East Asia section of IOTA. NEXT.

*4: This 2021 Phaethon occultation is the best-observed NEA occultation so far. NEXT.

*5: This 2022 Phaethon occultation was also well-observed, but after the previous events were so accurately predicted, we were surprised to have an over 2-km south shift of the shadow from the expected path. Unfortunately, no other Phaethon events have been observed since to confirm and quantify the shift. There are some opportunities late this year in North America and elsewhere. NEXT.

*6: We think the shift may have been caused by something that happened due to the strong thermal shock at Phaethon's May 2022 perihelion passage. NEXT.

*7: Two years ago, I discussed the first observed occultation by Apophis and how the following occultations helped retire the risk of Earth impact for the next century. NEXT.

*8: But because the star's position was a few Apophis angular diameters in error, from a high Gaia Renormalized Unit Weight Error, or RUWE, the next occultation was missed. Fortunately, on 2021 March 22, Roger Venable deployed 5 large telescopes along a highway in Florida to reach out far enough to catch the 2nd occultation, involving a star with good Gaia data, so Apophis' accurate orbit was finally secured. NEXT.

*9: Occultations by Didymos and Dimorphos dominated our work last year and in January this year. The season is now over, but we look forward to more of these occultations in late 2024.

*10: 2001 CC21 is a 600m flyby target of Hayabusa2, in 2025. Without radar, the ephemeris errors were large, but after 3 large efforts in Japan, an occultation was recorded on March 5th; the sky plane plot shows the coverage by earlier observations, and where the asteroid was found. . NEXT.

*11: Unfortunately, the March 5th star had high RUWE, so although the orbit was updated with it, the new JPL210 orbit was not accurate. This shows the sky plane coverage so far, considering only stars with good Gaia solutions. . NEXT.

*12: 2005 UD is a 1-km asteroid that likely broke off of Phaethon in the past. Occultation campaigns for it will start soon, since it is a flyby target of the DESTINY+ mission. . NEXT.

*13: This 2nd-to-last slide gives some conclusions. . NEXT.

*14: The last slide gives resources for more information about NEA and other asteroidal occultations.

Thanks for your attention.