

Commission F4 on Asteroids, Comets & TNOs (annual report 2022-2023)

Organizing Committee

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The F4 commission has 247 members, including 9 junior members. The research activity on asteroids, comets and TNOs through various approaches remains extremely productive as demonstrated by over 1400 peer-reviewed papers in 2022. The obtained new results were broadly discussed among OC and Commission members in order to highlight and promote the most important findings. The highlights have been posted on the IAU Commission F4 webpage.

The past year was marked by a successful space experiment aimed at testing an asteroid deflection technique, as reported by the Near-Earth Object Working Group. The NASA Double Asteroid Redirection Test (DART) mission successfully executed its intentional crash into Dimorphos, the satellite of asteroid Didymos. The immediate aftermath of the crash was imaged by the LICIACube cubesat by the Italian Space Agency. Telescopes around the globe and in space monitored these asteroids before and after impact, leading to the measurement of a change in the initial [orbital period of Dimorphos](#).

The [Data Release 3](#) by the ESA Gaia mission appeared in June 2022 is expected to be a primary source for further advancements in asteroids science in the coming years. JWST has started to collect data of small bodies in the main belt and outer solar system. The [analysis from Ryugu sample](#) returned by JAXA Hayabusa2 mission is ongoing and has revealed the most chemical pristine material that any other Solar System material analyzed. An unexpected ring was discovered around [dwarf planet Quaoar](#).

New versions of databases and catalogues have been released for our community, including Solar system Open Database Network [SsODNet](#) and the [Catalogue of Asteroid Polarization Curves](#).

The spectacular results of small bodies study were widely popularized by OC and Commission members. Small body-related results were presented at various meetings and workshops and promoted through poster, oral and invited presentations.

The OC prepared the FM proposal for IAU GA 2024; participated in the meeting of the NASA Small Bodies Assessment Group (Jan 24-26, 2023, Pasadena, CA, USA).