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Exploring the Solar System through Astronomical Observations

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In this talk, I will present the different observational projects I am involved in, for which I am actively seeking support in the form of master's and PhD students, as well as collaborations within the ICTEA and the University of Oviedo.

One of the main projects is ESSTE-JWST, which builds upon the success of previous programs such as DiSCo and GTO-KBOs, both operational since 2022. ESSTE-JWST aims to investigate the surface properties of a diverse and representative sample of primitive small bodies in our Solar System, spanning from the inner asteroid belt to the trans-Neptunian region. We are particularly interested in understanding how non-icy materials—such as dry or hydrated silicates and complex organics—vary across these populations and how they connect to key processes that delivered water and organic matter to the early Earth.

This project combines the unprecedented capabilities of the James Webb Space Telescope (JWST) with expertise from the IAC and my team to generate insights that address fundamental questions about planetary formation and the origin of life. Beyond its scientific goals, ESSTE-JWST has a strong educational component, providing opportunities for new generations of researchers to work with cutting-edge space mission data.

In the coming years, and thanks to ESSTE-Webb, the plan is to extend these studies of small body materials from the domain of ices to include asteroids—particularly near-Earth objects (NEAs)—by leveraging not only JWST observations but also other resources, primarily those available at the Observatorio del Teide (OT). I look forward to fostering collaborations that will strengthen this effort and contribute to the broader understanding of the composition and evolution of small bodies in our Solar System.

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