The exploration of the Solar System: current and future plans

Specific Seminar – Curriculum 3

2024, April 18, 10 a.m.

Speaker:

Prof. Roberto Orosei, Istituto Nazionale di Astrofisica- Istituto di Radioastronomia

Abstract:

Radio and microwave waves penetrate media opaque to visible light, enabling active sensors on deep space missions to gather data on Solar System bodies' topography, structure, and composition. Radar sensors, utilized since the 1970s, have mapped lunar Maria thickness, searched for ground ice in shadowed craters on the Moon, studied Venus's surface morphology, assessed Mars's polar caps and volcanic deposits, explored Titan's geology and hydrology, and analysed comet nucleus density and composition. Developing analysis methods and electromagnetic propagation simulations are crucial due to the lack of ground truth for data calibration. Future missions plan to use radar to study Jupiter's moons and continue exploring Solar System objects.

Short Bio:

Roberto Orosei, born in Reggio Emilia, Italy, earned his Ph.D. from the University of Rome "La Sapienza" after studying at the University of Bologna. With expertise in space exploration instruments, he contributed to missions like Rosetta, Jupiter Icy Moons Explorer, Cassini, Mars Reconnaissance Orbiter, Dawn, and Juno. As the principal investigator of MARSIS radar on ESA's Mars Express, he uncovered evidence of liquid water beneath Mars' South polar cap. He currently teaches astrobiology at the University of Bologna and works at the Institute for Radio astronomy in Bologna.

Online attendance:

https://unitn.zoom.us/j/88987362284?pwd=VlVKQzJVNXRuK2taM2R5TXNYTzRxdz09

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