

A new view of Outer Planets with the future ELT instruments

Survey and instruments

 Wednesday, July 3rd 2024  16:00 - 16:10  Mantegna "Platea"

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Uranus and Neptune have only been visited once by Voyager 2, in 1986 and 1989, respectively. And it will take another few decades before a dedicated spacecraft visits them again. It is thus lying on the shoulders of next generation ground based telescopes, and on the ELT in particular, to lead the exploration of these distant worlds. From the detailed recording of the changes in the different atmospheric layer through the seasons to tracking of trace species, the unprecedented spatial and spectral resolution of the new instruments will unveil the history of the most distant planets of the Solar System, from their origin to their latest storms and auroral brightening. The icy moons of the two Ice Giants are fascinating celestial bodies as well, with their cryovolcanoes, thin atmospheres and recent geological features and their properties will finally come within reach of ground-based observations. The spacecrafts bound to visit Jupiter (JUICE, Europa Clipper) and Saturn (Titan, actually, with Dragonfly) in the next decade will offer another avenue for ELTs to shine, by making ambitious synergistic investigations possible. Indeed Outer Planets consist of systems of closely interconnected parts, ranging from their distant magnetosphere to their deep interior, passing through volcanic moons and planetary rings. Indeed, even a spacecraft equipped with the best in-situ and remote sensing instrumentation can only be at one at a time and there will be a need for detailed, complementary and contemporary observations of the different components of these intricate systems.