



Uranus Pathfinder: Exploring the Origins and Evolution of Ice Giant Planets

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The Ice Giants (Uranus and Neptune) are different from the Gas Giants (Jupiter and Saturn) in a number of essential ways and yet our exploration of the Ice Giants in our own Solar System remains incomplete, with a number of fundamental questions unanswered. Uranus Pathfinder (UP) is a mission concept proposed to ESA in response to its 2010 call for medium-class (M) missions. UP proposes to explore the fundamental processes at work in the planet itself (its interior and atmosphere) and in its planetary environment (magnetosphere, satellites, and rings). The mission will provide observations and measurements that are vital for understanding the origin and evolution of Uranus as an Ice Giant planet, providing a missing link between our Solar System and planets around other stars. UP thus represents the quintessential aspects of ESA's Cosmic Vision 2015-2025. The mission architecture for UP involves a Rosetta-class spacecraft launching in 2021 on a Soyuz-Fregat launch vehicle, a 15 year transfer (incorporating numerous gravity assists) to Uranus, and insertion into a highly eccentric polar orbit. UP has significant community support with more than 150 scientists worldwide (more than 100 in Europe) lending their support to the mission. In this talk we will describe the science case, mission concept, and scientific payload for Uranus Pathfinder.