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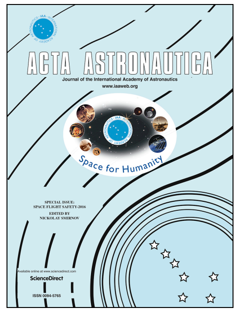

OCEANUS: A high science return Uranus orbiter with a low-cost instrument suite

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OCEANUS: A high science return Uranus orbiter with a low-cost instrument suite

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Abstract
Ice-giant-sized planets are the most common type of observed exoplanet, yet the two ice giants in our own solar system (Uranus and Neptune) are the least explored class of planet, having only been observed through ground-based observations and a single flyby each by Voyager 2 approximately 30 years ago. These single flybys were unable to characterize the spatial and temporal variability in ice giant magnetospheres, some of the most odd and intriguing magnetospheres in the solar system. They also offered only limited constraints on the internal structure of ice giants; understanding the internal structure of a planet is important for understanding its formation and evolution. The most recent planetary science Decadal Survey by the U.S. National Academy of Sciences, "Vision and Voyages for Planetary Science in the Decade 2013 – 2022," identified the ice giant Uranus as the third highest priority for a Flagship mission in the decade 2013-2022. However, in the event that NASA or another space agency is unable to fly a Flagship-class mission to an ice giant in the next decade, this paper presents a mission concept for a focused, lower cost Uranus orbiter called OCEANUS (Origins and Composition of the Exoplanet Analog Uranus System). OCEANUS would increase our understanding of the interior structure of Uranus, its magnetosphere, and how its magnetic field is generated. These goals could be achieved with just a magnetometer and the spacecraft's radio