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SYMPOSIUM ON TECHNOLOGICAL REQUIREMENTS FOR FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS (A7)
Scientific Motivation and Requirements for Future Space Astronomy and Solar System Science Missions (2)

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NANOSAT WITH MAGNETOMETER PAYLOAD TO COMPLIMENT THE EUROPA CLIPPER MISSION: A CONCEPT STUDY

Abstract

The NASA Europa Clipper is a multiple flyby mission to Europa with the primary goal of characterizing Europa's subsurface ocean. Clipper's short duration flybys, while extremely valuable, will not be able to provide a complete spatial or temporal picture of Europa's environment, a rich source of information on it's subsurface oceans. If a secondary nanosat payload could be placed in orbit for even a few hours, a wealth of additional information could be gathered, paving the way for detailed induction studies of Europa's internal structure. This concept study quantifies the feasibility of placing a 3U CubeSat in Europa orbit with the primary science goal of determining the thickness and conductivity of the subsurface ocean through magnetic induction techniques utilizing a small fluxgate magnetometer. In addition to feasibility, this concept study explores the mission architecture necessary for future nanosat missions to Europa and the Jovian system.