



The HADES Mission Concept - Astrobiological Survey of Jupiter's Icy Moon Europa

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The HADES Europa mission concept aims to provide a framework for an astrobiological in-depth investigation of the Jupiter moon Europa, relying on existing technologies and feasibility. This mission study proposes a system consisting of an orbiter, lander and cryobot as a platform for detailed exploration of Europa. While the orbiter will investigate the presence of a liquid ocean and characterise Europa's internal structure, the lander will survey local dynamics of the ice layer and the surface environment. The lander releases a cryobot, that melts into the ice, will sample the pristine subsurface and is expected to provide data on organic and gaseous content and putative bio-signatures. In summary, we present the scientific objectives for an astrobiological investigation of Europa, resulting in a mission concept with a detailed evaluation of scientific instrumentation, mission sequences, basic design of the spacecraft, technology needs and cost estimations.