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## The Particle Environment Package on board JUICE: What Can We Learn about Callisto's Atmosphere and Space Environment?

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The JUpiter ICy moons Explorer (JUICE) of the European Space Agency will investigate Jupiter and its icy moons Europa, Ganymede, and Callisto, with the aim to better understand the origin and evolution of our Solar System and the emergence of habitable worlds around gas giants. The Particle Environment Package (PEP) on board JUICE is designed to measure neutrals, ions, electrons, and energetic particles over an energy range from eV to MeV.

In the vicinity of Callisto, PEP will characterize the Jovian plasma environment and the outer parts of Callisto's atmosphere and ionosphere. Roughly twenty Callisto flybys with closest approaches between 200 km and 5000 km altitude are planned over the course of the JUICE mission. This study aims at optimizing the scientific insight gained from the foreseen flybys by combining the input from the PEP science team and operation planning with recent model efforts for Callisto's atmosphere, the plasma environment and the production of Energetic Neutral Atoms. The results of this study will inform both science operation planning of PEP and JUICE and they will guide future model development for Callisto's atmosphere, ionosphere, and their interaction with the plasma environment.