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Launching the Radiation Hard Electron Monitor aboard the ESA JUICE mission

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After the Galileo mission, launched in 1989, provided strong evidence of the existence of oceans beneath the icy crust of Jupiter's moons, Europa, Ganymede and Callisto, these icy worlds were hypothesised to be habitable. As a result, on April 2023, ESA will launch the JUICE mission to explore the icy moons of Jupiter and the gas giant itself.

In my Master thesis project, one of the main challenges that space exploration faces will be approached, the radiation environment. Specifically, in the Jovian System, composed of Jupiter, its moons and rings, the radiation environment is extremely harsh, with much larger electron fluxes and larger energies than the ones present on Earth. Aboard the JUICE spacecraft will be RADEM (RADiation hard Electron Monitor) and, both as an housekeeping instrument and a charged particle spectrometer, it will provide valuable information about the particle population. This instrument and its role in the JUICE expedition will be the focus of my project.

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