

## Synergetic Radio and Plasma Wave science for EJSM

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### Abstract

The radio and plasma wave (RPW) diagnostics provide a unique access to critical parameters of space plasma, in particular in planetary and satellite environments. Concerning giant planets, this has been demonstrated by major results obtained by the radio investigation on the Galileo and Cassini spacecraft, but also during the Ulysses, Voyager, and Pioneer flybys of Jupiter. Several other missions, past or in flight, demonstrate the uniqueness and relevance of RPW diagnostics to basic problems of astrophysics.

The EJSM mission consists of two platforms operating in the Jupiter environment: the NASA-led Jupiter Europa Orbiter (JEO), and the ESA-led Jupiter Ganymede Orbiter (JGO). JEO and JGO will execute a choreographed exploration of the Jupiter System before settling into orbit around Europa and Ganymede, respectively. The EJSM mission architecture hence offers unique opportunities for synergistic and complementary observations that significantly enhance the overall science return of the mission.

In this paper, we will first review new and unique science aspects of the Jupiter system that may benefit from different capabilities of RPW investigations onboard JGO and/or JEO: spectral and polarization information, mapping of radio sources, measurements of in situ plasma waves, currents, thermal noise, dust and nano-particle detection and characterization.

We will then illustrate unique synergistic and complementary science opportunities offered by RPW investigations onboard JGO and/or JEO, both in terms of Satellite science and in terms of Magnetospheric Science.

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