



Numerical calibration of the JUNO/Waves antenna properties

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Abstract

In this presentation, the first analysis of the electrical field sensors of the Waves instrument onboard the JUNO spacecraft is reported, which is planned to be launched in August 2011.

The Waves instrument, which is part of the radio/plasma wave experiment, carries two boom antennas extruded from the main body of the spacecraft as sensors. Due to the fact that the spacecraft configuration does not allow a third antenna boom, tri-axial measurements for goniopolarimetric techniques, like direction finding, are only possible using the technique of a rotating spacecraft. In addition the antennas are subject to distortion by the nearby conducting spacecraft body.

To acquire the true antenna parameters we use a software model and a known electromagnetic solver to calculate the current distribution on the spacecraft. The knowledge of the current distribution allows the estimation of the true antenna parameters represented by the effective antenna vectors and associated impedances.

The analysis of the reception properties of these antennas is presented, along with a contribution to the understanding of their

impairment by other objects on the spacecraft.