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Numerical studies of the Solar Orbiter RPW antennas

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The Solar Orbiter RPW radio experiment includes three scientific cylindrical monopole antennas mounted on booms which extend from the spacecraft body. Numerical studies of the Solar Orbiter RPW antenna properties were performed, using a wiregrid model of an early design of the spacecraft to analyse the characteristics of the antennas to be
expected during the mission. Several important features and results of this calibration process are presented, including the effective length vectors, the input impedances, the effect of thermal bending of the antennas, turning of the high gain antennas and a shift of the antenna base points. Additionally the effect of the surrounding plasma was investigated.