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**Title:** The ionosphere of Callisto from Galileo radio occultations

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**Abstract** An ionosphere has been detected at Callisto by the Galileo spacecraft, using the radio occultation technique. There were four usable occultations by Callisto, providing eight observation opportunities, all equatorial and near the terminator (entry and exit observations). Detectable electron densities were obtained from 6 of the 8 opportunities. It was found that a detectable ionosphere was only present at the observed location when the trailing hemisphere of Callisto, which is the one that is impacted by the corotating plasma of Jupiter's magnetosphere, was illuminated by the Sun. Two of these observations yielded well-defined electron density profiles, having peak densities of 15,300 and 17,400 cm<sup>-3</sup> at altitudes of 27.2 and 47.6 km, and topside plasma scale heights of 29.6 and 49.0 km. These observations were used to obtain estimates of the corresponding neutral densities at the surface, using eight different methods. All of the estimates of the surface neutral density gave very similar results in each of the eight cases, yielding surface densities between 1 and 3 x 10<sup>10</sup> cm<sup>-3</sup>.

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