

Studying the lunar ionosphere with SELENE Radio Science experiment

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The electron density profiles above the lunar surface will be observed by the radio occultation technique during the SELENE mission using the Vstar sub-satellite. Previous radio occultation observations have indicated the existence of an ionosphere with densities of up to 1000 cm^{-3} above the dayside lunar surface. The measured densities are difficult to explain theoretically when the removal of plasma by the solar wind is considered, and thus the generation mechanism of the lunar ionosphere is a major issue, with even the validity of previous observations still under debate. The SELENE radio science experiment will establish the morphology of the lunar ionosphere and will reveal its relationship with various physical conditions to provide possible clues to the mechanism.