



Influence of the solar wind parameters on the distribution of the electric potential near the Moon's surface

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The Moon's surface illuminated by the Sun acquires an electric charge due to photoelectron emission and interaction with the solar wind plasma. The influence of the solar wind parameters on the nonmonotonic distribution of the electric field potential near the Moon's surface is studied in a wide range of the densities of emitted photoelectrons. It is found that for any photoelectron density the surface potential reaches its minimum value for a slow solar wind. Although the electron thermal velocity can exceed the solar wind velocity by several times, taking into account the directed flow velocity in the electron velocity distribution function substantially affects the value of the potential in the lunar regolith regions not enriched with hydrogen, for which the photoelectric work function under solar irradiation is significantly higher than for regions enriched with hydrogen.