A 2-Dimensional full particle simulation of electric structures around the moon

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The electric field structure around the moon is studied by using a two dimensional electromagnetic full particle simulation in order to examine the presence of an intense electric field. By considering absorption of the plasma particles at the surface of the moon, we found that an intense electric field is produced at the terminator region on the boundary between the negatively charged, nightside surface of the moon and the electrically neutral, dayside surface, even though photoelectrons are not taken into consideration in this study. The intensity of the electric field at the terminator region is 2-7 times stronger than the electric field in the wake boundary $3R_L$ downstream of the moon obtained in the simulation. The thickness of the layer of the electric field is of the order of Debye shielding length.