

Debye length in the wake of a non-magnetized object in the solar wind

Tomoko Nakagawa^{1*}

¹Tohoku Institute of Technology

Importance of surface charging of downstream-side surface of a non-magnetized obstacle in the solar wind is studied with 2-D electromagnetic particle-in-cell simulations [1] [2] [3] by changing the size of the obstacle with respect to the Debye length. It was revealed that even in the case of a large obstacle, the electric field in the wake extends far downstream beyond the Debye length in the unperturbed solar wind. It is mainly due to the highly depressed electron density and nearly constant electron temperature in the wake.

References

[1] Kimura, S. and T. Nakagawa, *Earth Planets Space*, 60, pp.591-599, 2008.

[2] Nakagawa, T., and S. Kimura, *Earth Planets Space*, 63(6), pp.477-486, 2011.

[3] Nakagawa, T., *J.Geophys. Res.*, 2013, in press.

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