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Correlation of dust injection rate and microwave penetration of an overly dense plasma layer ERIC D. GILLMAN, US Naval Research Laboratory, JEREMIAH WILLIAMS, Wittenberg University, BILL AMATUCCI, US Naval Research Laboratory — Microparticle injection into a plasma discharge, producing a dusty plasma, has been shown to significantly reduce the electron density as electrons are captured during the microparticle charging process. This has in turn been shown to increase the transparency and penetration of microwaves into an overly dense plasma layer. Results from these studies focus on understanding the correlation between the rate of microparticle injection and effects on microwave penetration of the plasma layer, as well as microwave scattering off of the charged microparticles. These studies are applicable for mitigating the communications radio blackout problem experienced by hypersonic vehicles and may have additional applications for satellite communications.

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