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Excitation of Ion Acoustic Waves in Plasmas with Electron Emission from Walls A.V. KHRABROV, H. WANG, I. D. KAGANOVICH, Y. RAITSES, PPPL, D. SYDORENKO, University of Alberta, Canada — Various plasma propulsion devices exhibit strong electron emission from the walls either as a result of secondary processes or due to thermionic emission. To understand details of electron kinetics in plasmas with strong emission, we have performed kinetic simulations of such plasmas using EDIPIC code. We show that excitation of ion acoustic waves is ubiquitous phenomena in many different plasma configurations with strong electron emission from walls. Ion acoustic waves were observed to be generated near sheath if the secondary electron emission from the walls is strong. Ion acoustic waves were also observed to be generated in the plasma bulk due to presence of an intense electron beam propagating from the cathode. This intense electron beam can excite strong plasma waves, which in turn drive the ion acoustic waves. Research supported by the U.S. Air Force Office of Scientific Research.

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