

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Secondary Electron Emission in the Limit of Low Energy and its Effect on High Energy Physics Accelerators¹ A.N. ANDRONOV, A.S. SMIRNOV, St. Petersburg State Polytechnical University, St. Petersburg, 195251 Russia, I.D. KAGANOVICH, E.A. STARTSEV, Y. RAITSES, R.C. DAVIDSON, Plasma Physics Laboratory, Princeton University, Princeton, NJ 08543 USA, V. DEMIDOV, West Virginia University, Morgantown, WV, USA — Authors of the Letter [1] reported that the secondary electron emission (SEE) coefficient approaches unity in the limit of zero primary electron energy. This occurs due to nearly 100% electron reflection from the surface, for electron energy less than an electron volt. If correct, this finding could have profound implications on electron cloud formation in high-energy accelerators and sheath structure in plasmas, because electrons approaching the wall with energy below an electron volt are reflected from the walls and thus are effectively confined by the walls. In this paper, we summarize comprehensive studies rendering this claim inaccurate; that is most electrons are lost on walls. These studies include theoretical analysis of SEE properties in the limit of low electron energy, analysis of measuring device errors, and experimental observation of the operation of probes collecting electron current.

[1] R. Cimino, *et al*, Phys. Rev. Lett. **93**, 014801 (2004).

¹Research supported by the U.S. Department of Energy.

A. N. Andronov

Date submitted: 14 Jul 2011

Electronic form version 1.4