Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

How valid is the concept of a bi-Maxwellian distribution? N.S. BRAITHWAITE, R.N. FRANKLIN, The Open University — The sheath of a plasma with two distinct negative species was examined by Braithwaite and Allen (1988). There is no doubt of its validity to describe the situation in electronegative plasmas at low pressures when the species are electrons and negative ions, and much of the understanding of such plasmas has resulted. Though it may be convenient to describe the electron energy distribution in electropositive plasmas as if there are two distinct species, one needs to be careful in deriving such things as a modified Bohm criterion. In most situations there is but one distribution and one cannot distinguish "red" and "blue" electrons. The electrons move between different parts of the distribution by a process of "diffusion" well described by Tsendin (2009). Thus unless different parts of the total electron distribution clearly do not interact, results obtained by assuming two independent populations with different densities and temperatures lack validity.

Raoul Franklin
The Open University

Date submitted: 02 Jun 2009 Electronic form version 1.4