

Abstract Submitted
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The Bohm Criterion in Collisional Plasmas – A Comparison of Different Approaches¹ RALF PETER BRINKMANN, Theoretical Electrical Engineering, Ruhr-University Bochum — The plasma sheath transition in stationary low temperature plasmas is investigated for arbitrary levels of collisionality. The model under study contains the equations of continuity and motion for a single ion species, Boltzmann's equilibrium for the electrons and Poisson's equation for the field. Within this simple but self-consistent model, the arguments of various authors with respect to the existence or non-existence of a collisional modified Bohm criterion are compared. Godyak (1982 Phys. Lett. A 89 80), Valentini (1996 Phys. Plasmas 3 1459), Chen (1997 Phys. Plasmas 5 804) and Brinkmann (2011, J. Phys. D: Appl. Phys. 44, 042002) argued in favor of such a concept, Riemann (1991 J. Phys. D: Appl. Phys. 24 493) and Franklin (2003 J. Phys. D: Appl. Phys. 36 2821) disputed it.

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Ralf Peter Brinkmann
Theoretical Electrical Engineering, Ruhr-University Bochum

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