

Abstract Submitted  
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**Different models of the plasma-sheath transition** KARL-ULRICH RIEMANN, Ruhr-University Bochum — The space charge formation in the boundary layer of a quasi-neutral plasma is strongly influenced by the contribution of slow ions. As a consequence, the structure of the plasma-sheath transition depends in detail on the way how slow ion production is accounted for in the applied modeling approach. The “intermediate scale” connecting plasma sheath is therefore different (i) in fluid analysis, (ii) in kinetic analysis with cold ion source, and (iii) in kinetic analysis with hot ion source. We discuss the different models and present convenient analytical approximations for the cases (i) and (ii). The approximations supplement corresponding sheath approximations published previously [1]. The case (iii) is not solved until now. We derive the appropriate scaling and discuss the inherent difficulties.

[1] K.-U. Riemann, Plasma Sources Sci. Technol. **18**, 014007 (2009)

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