

Abstract Submitted
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The Bohm Criterion Revisited NATALIA STERNBERG, Clark University, VALERY GODYAK, Osram Sylvania — The plasma-sheath model and the Bohm criterion introduced by Bohm is one of the earliest attempts to model the plasma and the sheath separately, and to find a way to join the plasma and the sheath solutions. Although there is hardly a paper on plasma-sheath modelling that does not quote the Bohm criterion, Bohm's paper and his results are widely misunderstood. The reason for this is that in his paper, Bohm himself misinterpreted his result by concluding that the sheath edge coincides with the reference point of his plasma-sheath model. As a result, the criterion for the reference point obtained by Bohm to ensure monotonicity of his sheath solution (i.e., the Bohm criterion) was erroneously applied to the sheath edge and used in the literature as a criterion for sheath formation. We show that the Bohm criterion when applied to the sheath edge contradicts Bohm's own definition of the sheath, and cannot be obtained from Bohm's plasma-sheath model.

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