

Abstract Submitted
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Ill-posed problems in low temperature plasmas RAOUL FRANKLIN, The Open University — Godyak and Sternberg pointed out that treating the plasma-sheath problem for an active plasma by integrating inwards from a plane wall towards a semi-infinite plasma was ill-posed in the sense that the wall flux was finite while the generation was infinite. Here we further examine this type of situation in other geometries and with a magnetic field. Some workers have sort to deal with the problem by supposing that in the body of the plasma generation is balanced by recombination, but at low pressures this is not physically realistic since three-body recombination is negligible, and electron-ion recombination rates are orders of magnitude smaller than typical generation rates. Our general conclusion is that active plasmas are necessarily finite – that is they “know” they are bounded. This leads to the plasma balance, or global equation involving the generalized Bohm speed.

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