

# Secondary Electron Emission and Collisional Effects in a Two-Electron Temperature Plasma Sheath

G. Sharma, R. Paul, K. Deka, R. Moulick, S. Adhikari, S. S. Kausik, B. K. Saikia

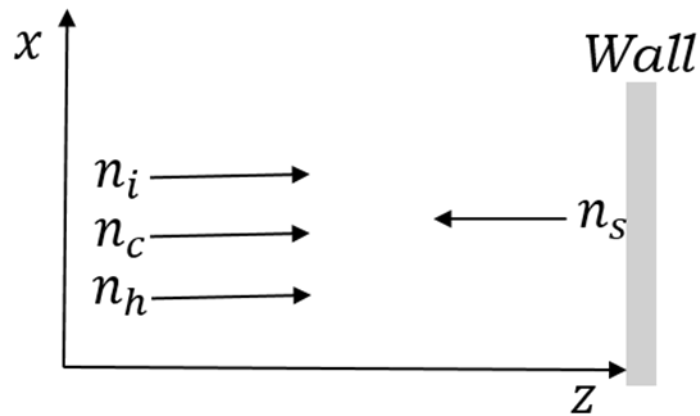


Figure: Geometrical representation of the model. The plasma has one positively charged ion species and two negatively charged electron species with distinct temperatures and densities. The secondary electrons are generated at the wall surface and sheath electric field pushes them to the bulk plasma region.

Secondary electron emission (SEE) from the plasma-facing materials due to bombardment of high energy electrons is a crucial phenomenon. The physics of sheath formation in front of an electron-emitting surface is explored considering the plasma fluid model. The non-extensive distribution function is used to describe the hot and cold electron population in the plasma. We found that SEE increases for higher values of the hot-to-cold electron temperature ratio, which may lead to the formation of an inverse sheath. The space charge deposition is greatly effected by the SEE. Moreover, non-extensive parameter of the cold electron also emerged as a dominating parameter in determining sheath structure.

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