

Plasma sheaths in presence of strong emitting surface

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We present Particle-in-Cell/Monte Carlo Collision model [1] of two different examples of space charge saturated sheaths induced by active walls in the acceleration region of a Hall thrusters discharge [2] and in the extraction region of a radio-frequency inductively coupled hybrid negative ion source [3]. In the first case a strong secondary electron emission induce a double layer on the lateral outer cylindrical wall sheaths, while in the second case the production of H^- by neutral conversion on caesiated plasma grid is the origin of a potential well just in front of the surface.

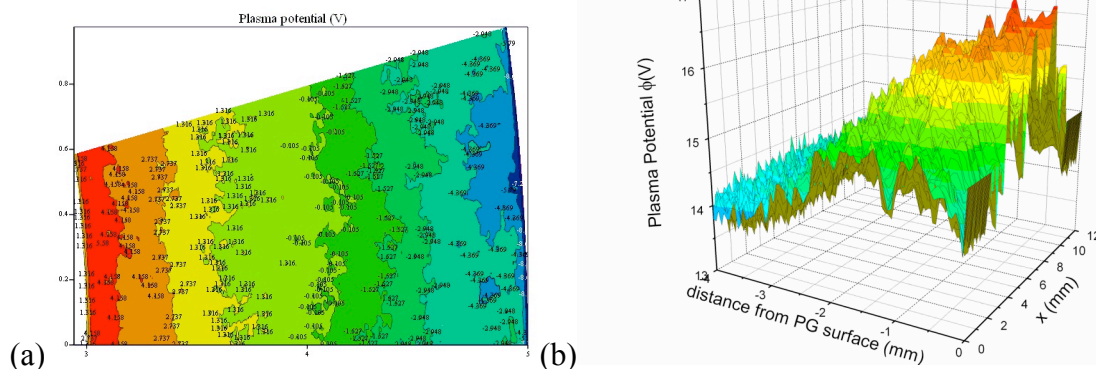


Fig. 1 - Color plot of the 2D plasma potential in (a) the acceleration region of Hall effect discharge and (b) in the extraction region of negative ion source.

References

- [1] C. K. Birdsall and A. B. Langdon, *Plasma Physics via Computer Simulation* (McGraw-Hill, New York, 1985).
- [2] A. I. Morozov, V. V. Savelyev, *Reviews of Plasma Physics* Vol. 21, ed. B. B. Kadomtsev and V. D. Shafranov (New York: Consultants bureau, 2000), 203.
- [3] E. Speth *et al.*, *Nucl. Fus.*, Vol. 46, pp. S220-S238, 2006.