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PIC simulations of space charge limited flow[1] MARTIN E. GRISWOLD, NATHANIEL J. FISCH, PPPL, JONATHAN S. WURTELE, LBNL — Achieving the maximum possible current density continues to be an important goal with far ranging applications. The space charge limit to current in diodes can be affected by a number of parameters, such as finite emitter size [1] and short pulse length [2]. Here, using a particle-in-cell code, we examine a number of interesting phenomena associated with space charge limited flow, including virtual cathode formation for time-dependent situations.

[1] Luginsland, Lau, et. al., Physics of Plasmas 9 (2002) 2371
[2] Valfells et. al., Physics of Plasmas 12 (2002) 2377

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