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Space-charge limiting of a photoinjected electron pulse ERIC PRE-STON, APS, CLINTON THOMPSON, SPS — The classical space-charge limiting problem was solved for thermionically emitted electrons being injected at a constant rate. In various modern applications, electrons are produced from photo-emission with a non-Maxwellian energy distribution and in short duration pulses. With a dynamical 1-d plasma simulation, we show that pulsed sources often experience more severe space- charge limiting than the constant current density approximation suggests.

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