Abstract Submitted
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Experimental and Simulation Study of Electric Field Screenings of Carbon Fiber Field Emitters[1] WILKIN TANG, DON SHIFFLER, Air Force Rsch Lab-Albuquerque, MATTHEW LACOUR, KEN GOLBY, Leidos Inc., TIM KNOWLES, Energy Science Laboratory Inc. — Field emitter arrays have the potential to provide high current density, low voltage operation, and high pulse repetition for radar and communication. It is well known that packing density of the field emitter arrays significantly affect the emission current. Previous experiments were conducted with 1000s of field emitters which makes the analysis of electric field screening difficult. Here we describe experiments in a dual-cathode and four-cathode configuration. The experiments used different number of carbon fiber field emitters (two and four) with variable spacing to investigate the effect of electric field screening on current emission. Emission characteristic is compared for the case of two and four field emitters with different spacing. Analytic model and Particle-in-cell simulations are performed to compare with the experiments.

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