

Abstract Submitted  
for the GEC19 Meeting of  
The American Physical Society

**Paschen Curves for Pulsed Breakdown**<sup>1</sup> DMITRY LEVKO, ROBERT ARSLANBEKOV, VLADIMIR KOLOBOV, CFD Research — The influence of the voltage rise time on the Paschen curves is analyzed using kinetic and fluid models. The Paschen curves, which describe the dependence of the breakdown voltage,  $U_{br}$ , on the product  $pd$  of gas pressure  $p$  and the characteristic length  $d$  between the electrodes, have minima that correspond to optimal conditions for plasma generation. It is shown that both kinetic and fluid models predict the experimentally observed shift of the curves toward higher voltages and the shift of the Paschen minima toward higher values of  $pd$  with decreasing the voltage rise time  $\tau$ . On the right branch of the Paschen curves, the agreement between both models is obtained for all  $\tau$ . We confirm that the minimum of the Paschen curves corresponds to conditions of electron runaway. At the left branch, the electron velocity distribution function is non-local in space and also non-local in time.

<sup>1</sup>Supported by DoE SBIR Phase II Contract: DE-SC0015746 and by NSF EPSCoR project OIA-1655280

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Date submitted: 04 Jun 2019

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