Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Modelling of Low Pressure Breakdown by a Monte Carlo Technique MARIJA SAVIC, MARIJA RADMILOVIC-RADJENOVIC, ZORAN PETROVIC, Institute of Physics, Belgrade-Serbia, INSTITUTE OF PHYSICS TEAM — It was recently shown that the basic assumption of Townsend's theory that ions produce the secondary electrons is correct only in a very narrow range of conditions [1]. According to the revised Townsend's theory [1] secondary electrons required to maintain the discharge are produced in collisions of ions, fast atoms, metastable atoms and photons with the cathode or by gas phase ionization mainly by fast neutrals. In this paper, we have tried to build up a procedure for obtaining the secondary electron yields from the gas breakdown data motivated by the fact that published results for the secondary electron yields from ion beam experiments and gas discharges are systematically in serious disagreement. For that purpose, we use a Monte Carlo code that is not limited by assumptions of the energy distribution function and that includes gas phase and surface collisions in arbitrary number and degree of complexity of representation. The results provide partial contributions of different processes and are in general, if not in all detail in agreement with [1]. Argon as a test was the first obvious target of study with calculations being extended to other gases.

[1] A.V. Phelps and Z.Lj. Petrović, *Plasma Sources Sci. Technol.* **8** (1999).

Zoran Petrovic
Institute of Physics, Belgrade-Serbia

Date submitted: 11 Jun 2009 Electronic form version 1.4