Abstract Submitted
for the GEC07 Meeting of
The American Physical Society

Preventing transient spots on thermionic cathodes[1] MIKHAIL BENILOV, PEDRO ALMEIDA, MARIO CUNHA, Departamento de Fisica, Universidade da Madeira, Largo do Municipio, 9000 Funchal, Portugal — Transitions between diffuse and spot modes of attachment of a high-pressure arc to a thermionic cathode, provoked by a current jump, are studied by means of a numerical and physical experiment. The numerical simulation is based on the model of nonlinear surface heating, which has become during the last decade a universally accepted tool for modeling arc-cathode interaction. Experiments were performed on COST-529 standard lamps, which are HID lamps with quartz walls and a quartz envelope. The lamps had pure tungsten cylindrical electrodes and operated at pressures of about 4 bar. The power supply to the lamps was provided by a voltage driven power amplifier FM 1295 DCU/I 750, which functioned as a current source and was controlled by an arbitrary waveform generator Agilent 33220A or by an analogue function generator Leader LFG–1300S. A good agreement between the numerical modeling and experimental results was found. A possibility of prevention of formation of transient spots is demonstrated both numerically and experimentally.

[1]Work supported by FCT, POCTI-219 and FEDER through projects POCI/FIS/60526/2004 and CCM.

Mikhail Benilov
Departamento de Fisica, Universidade da Madeira,
Largo do Municipio, 9000 Funchal, Portugal

Date submitted: 15 Jun 2007 Electronic form version 1.4