

P1.3019 Discharge initiation by a laser pulse in a vacuum gap

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See the full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P1.3019.pdf>

Laser-induced discharge within a vacuum gap of few millimeters between electrodes is experimentally studied. The discharge is triggered by 1064 nm Nd:YAG laser pulses with intensities varied from 10^7 W/cm² to 10^9 W/cm² on the surface of titanium target electrode. The current formation time dependences from both the gap length and the residual gas pressure at a fixed electrode voltage were determined. Residual gas pressure varied from 10^{-6} to 10^{-2} torr, and voltage varied from 100 V to 5 kV. The dependences of current formation time on the laser pulse intensity and the voltage difference on the electrodes of different polarity are presented. The laser intensity thresholds for discharge are determined in our experimental conditions. In addition, we conducted the probe diagnostic of the laser plasma induced on the titanium target surface and inferred about the process of the discharge initiation by a laser pulse in a vacuum gap.

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