Analytical model of a normal mode capacitive discharge VALERIY
LISOVSKIY, Kharkov National University, Svobody sq.4, Kharkov 61077, Ukraine,
VLADIMIR YEGORENKOV — This paper develops an analytical model describing
onset conditions and characteristics for a normal mode of a low pressure capacitive
discharge. The model assumes that conductivity current in the plasma volume and
displacement current in near-electrode sheaths are equal as well as the ambipolar
ion flux out of the plasma and drift ion flux with charge exchange in the sheaths
(described by the collisional Child-Langmuir law). The normal current density is
found to be proportional to gas pressure and rf field frequency squared, i.e., $J_n \propto p\omega^2$.
Calculation results match well with registered data for a number of gases.

Valeriy Lisovskiy
Kharkov National University, Svobody sq.4, Kharkov 61077, Ukraine

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