

# **MATHEMATICAL MODELING OF TRIODE FIELD EMISSION SYSTEM WITH SHARP-EDGED CATHODE**

Nikolay Egorov, Grigoriy Doronin, Ekaterina Vinogradova  
Saint Petersburg State University, Saint Petersburg, 199034 Russia, n.v.egorov@spbu.ru

## **ABSTRACT**

Field emitters have great practical applications in such devices as electronic displays, cathode-ray light sources, X-ray sources, electron microscopes, etc [1]. In this work the emission triode system based on an axially symmetrical sharp-edged field cathode on a plane substrate is under investigation. Anode is a plane, parallel to the substrate. The modulator is a circular diaphragm. The variable separation method is used to solve the boundary-value problem in cylindrical coordinates. To calculate the potential distribution an effect of the field cathode is simulated using the charged circular line [2-4]. The electrostatic potential distribution is represented as Fourier-Bessel expansion. The unknown coefficients in the expansion are a solution of the linear algebraic equations with constant coefficients. The potential distribution is found throughout the triode system under study.

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## **References**

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