ELECTRIC FIELD SOLUTION OF CYLINDRICAL HOLLOW CATHODE

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Hollow cathode is widely used in a gas discharge experiment because the electrode structure is good at the high current discharge with a high efficiency.
However, the analytic solution of electric field has not been reported elsewhere to our knowledge.
In this study, Laplace solution of cylindrical hollow electrode is analyzed.
The profiles of potential and electric field are represented according to the hole-diameter and the depth of hollow cavity.
Using the breakdown criteria, the discharge characteristics are analyzed such as the breakdown voltage, the current, and the main discharge path at the hollow cavity.
The structure of hollow cathode can be discussed through this analysis. [1]

1. G. S. Cho, Y. G. Kim, Y. S. Kim, D. G. Joh, E. H. Choi, “Analysis of Firing Voltage in a Plasma Display Panel of Coplanar Electrodes”, Jpn. J. Appl. Phys. Vol. 37 No. 10A, 1998, pp. L1178-L1180.