Task 4: Influence of Barriers to Electrical Strength in Non-Uniform Electric Field

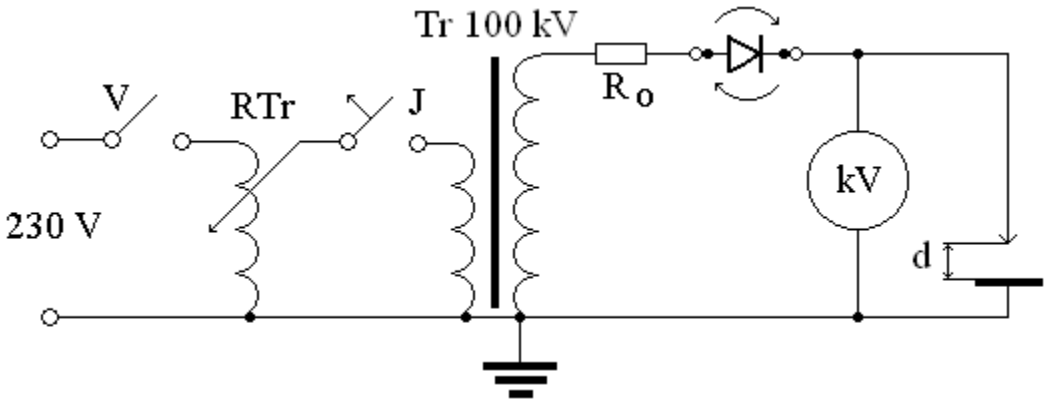
(Laboratory F1-115)

a) Measure the flashover voltage U_P in the dependency of gap distance d for both dc voltage polarities. Gap distance should be stepwise increased up to 100 mm with step about 20 mm.

b) Determine the optimal location of the barrier (the distance of the barrier from the plane is marked as a) for the distance between electrodes d = 50 mm. The positive voltage polarity is applied to the tip.

The polarity effect in non-uniform electric field should be smartly explained as a part of the conclusion of the paper!

Measurement circuit:



V – switch
RTr – controlled power transformer
J – breaker
Tr – testing transformer 100 kV
Ro – limiting resistor
kV – electrostatic kilo-voltmeter
d – controllable gap distance between electrodes

Example of the Graphical Evaluation of Results:

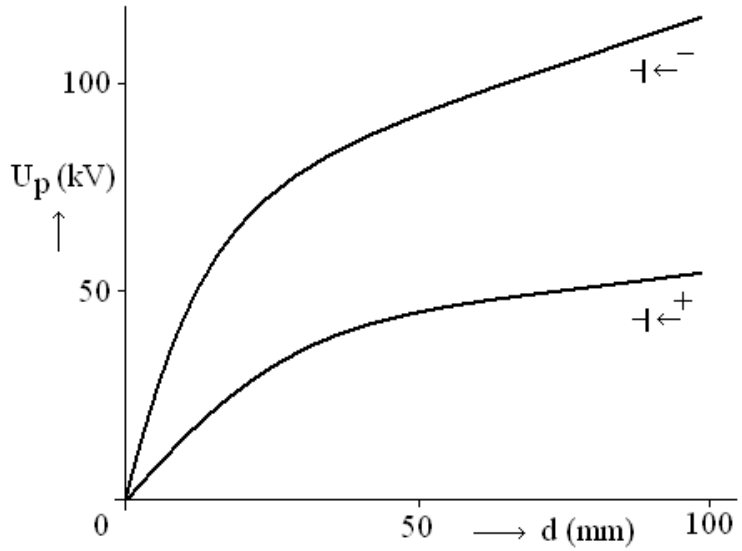


Fig. 1: Dependency of the flashover voltage to gap distance

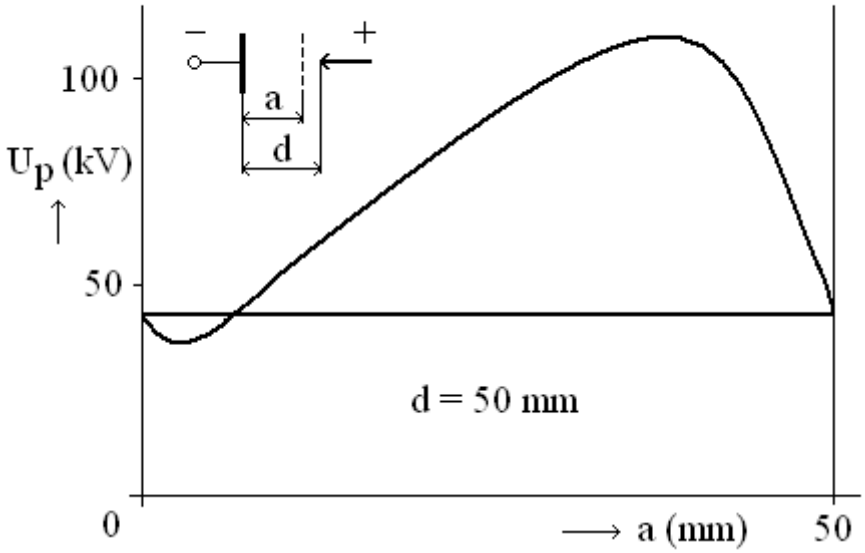


Fig. 2: Dependency of the flashover voltage to the location of the barrier in non-uniform electrical field