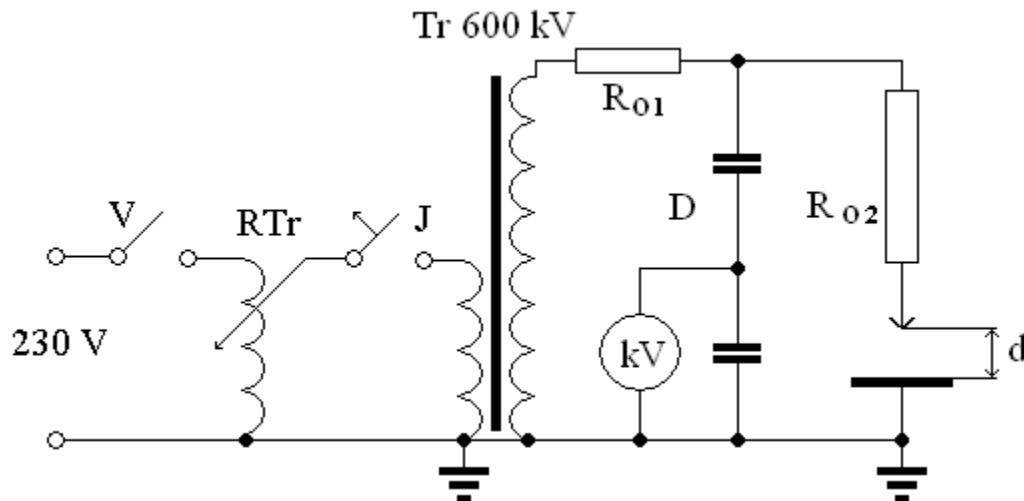


Task 5: Electrode Shape Influence to the Flash-over Voltage in the Air

(Laboratory F1-13, main lab)

Determine the electrical strength of electrode arrangements tip-tip, tip-plane, sphere-plane, and sphere-sphere for ac voltage. Three measurements should be performed for each distance level of electrodes of each electrode arrangements according to respect probability of discharges in the air. Results should be plotted to one graph.

Measurement circuit:



V – switch

RTr – controlled power transformer

J – breaker

Tr – testing transformer 600 kV

Ro – limiting resistor

D – high voltage divider (capacitive)

kV – digital voltmeter with the setting of transfer ratio

Ro2 – limiting resistor

d – controllable distance between electrodes

Measured electrode arrangements:

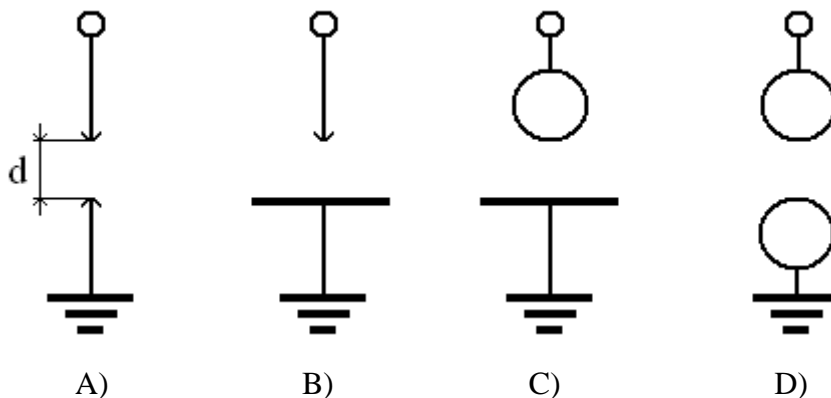


Fig. 1: Electrode arrangements (with gap distance d):

A) tip-tip, B) tip-plane, C) sphere-plane, D) sphere - sphere

Example of the Table of Measured Values:**Table 1:** Electrode arrangement **tip-tip**

Tip-tip	Gap distances d_i (mm)				
U_1 (kV)					
U_2 (kV)					
U_3 (kV)					
$\emptyset U$ (kV)					

Table 2: Electrode arrangement **tip-plane**

Tip-plane	Gap distances d_i (mm)				
U_1 (kV)					
U_2 (kV)					
U_3 (kV)					
$\emptyset U$ (kV)					

Table 3: Electrode arrangement **sphere-plane**

Sphere-plane	Gap distances d_i (mm)				
U_1 (kV)					
U_2 (kV)					
U_3 (kV)					
$\emptyset U$ (kV)					

Table 4: Electrode arrangement **sphere - sphere**

sphere - sphere	Gap distances d_i (mm)				
U_1 (kV)					
U_2 (kV)					
U_3 (kV)					
$\emptyset U$ (kV)					

Example of the Graphical Evaluation of Results: