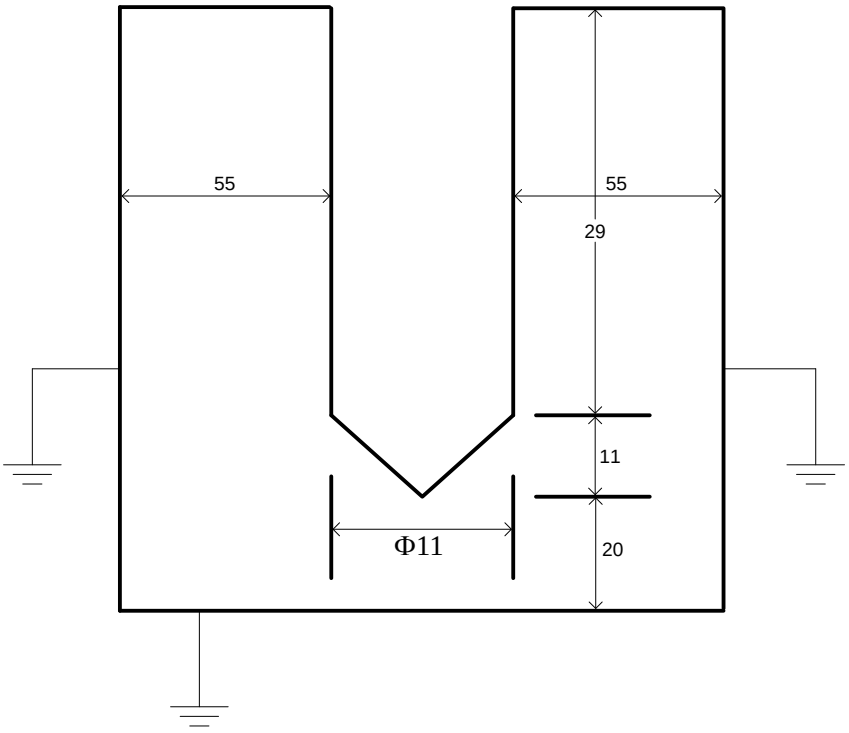
Assignment 2
EE 673: Power Systems & Power Electronics Laboratory

Problem:
The geometry of a point-plane electrode is shown in fig below.



ALL DIMENSIONS ARE IN mm

- Calculate the electric stress at the sharp point using ANSYS v7.0 and attach the plot of electric stress and potential distribution.
- Also, find the analytical value of electrical stress at this sharp point.
- Compare FEM and analytical values and give your comments.
- Calculate corona inception voltage for the configuration using published literature (For example: http://www.elk.itu.edu.tr/ ozcan/eic01.pdf, please search any other available paper on the subject)

Consider the following points while simulating the above problem:

1. Electrode is kept at 100 kV.
2. Surrounding medium is air.

To calculate the analytical value of electrical stress you may take help of the following paper:
G. Chen and A. E. Davies, "Electric stress computation- a needle-plane electrode system with space charge effects," *International Journal for computation and mathematics in Electrical and Electronics Engineering,* Vol. 15, No. 1, 1996, pp. 40-56.