Second scenario :

As mentioned before our aim is to solve the equations of the second model “real model” and to find the voltage destibution and field intensity every where and of course try to find the velocity of air of the unit we aim to model so we tried to solve it using matlab pacages and its numerical methods .

The flow of the algrothem is as follows

Defining the parameters he need most important that was mentioned before like premetivity and geometry prarmeters and then setting the boundary condition of the second model , as we use numerical method of (finite deffrince) to solve all the equations together then it identify the grid and mesh and start with initial condition to solve poisson then by this he gets the voltage every entering a loop to get a better accuracy and by a boundary condition of kapatov’s hypothes we can get the electric field at the surface of the wire and by the numerical way of gradient you can get the electiric field from the voltage here we tried to solve stocks naviare equation to find the velocity from a force comes from the electric field above applied on the ions that get out because of the corona phenomena in some similar way “but at this point it was a little hard to get good results at matlab “

Figure 1 : potential difference and distribution when applied different Volts on the wire

Figure 2: electric field in the region at different applied voltages

Figure 3 : velocity intensity at different applied voltages

At figure 1 we describe the solution at many points as in the space between wire and the foil at different voltages this ouput is taken to get the electric field intensity from the gradient at figure 2 from this taken to be solved to get the velocity and meawhile the thrust “the most important parameter”

Unfortenatlly the solution of velocity and some other parameters is not accurate and aculty almost wrong and time wasn’t that good to learn another ways.

Fourth method :

Using a software backage called CST that can simulate different phenomenas including corona effect we tried to make the model and see some results

As we started to draw the unit of the lifter wire and the aluminum foil

as we can’t set voltage to a non-PEC matrial we set both the wire and aluminum foil into PEC and imagine it as approximation

taking the steps into initializing the system and boundary condition and material into air and inseart it into the PEC

due to limited knowledge and time when simulating no results output because of a error that connects the two PEC as shown in figure 4