**Attached Documents**

1. **IP\_Report**: Contains the report of the details of IP with all the equations and the derivations. The report is mostly self-explanatory.
2. **IP\_SupportData**: Contains the wind support data where we try to find the maximum value of α by changing various factors involved in the equation. We also try to find the maxima by changing the value of θ and keeping rest of the variables static. We then find out that the maximum value of θ for which the value of α is maximum lies between 90o to 120o.
3. **Scripts**: Contains the various MATLAB scripts concerned with the project. They have been divided in two different folders:
4. **Calculation:** Contains various scripts for calculation of data

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| Full\_calc\_normal | Calculates various parameters for with/without air drag. Wind is not considered in this script |
| Full\_calc\_wind | Calculates various parameters considering that wind is blowing with a certain angle |

1. **Graph:** Contains various scripts to plot graphs required to prove various equations. Some of the values of the equations have been hardcoded for results. Appropriate changes can be done to get variations in the graphs

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| Graph\_drag\_diff\_k | Plots the graph of trajectory with air drag comparing between various values of drag coefficients (k) of the payload |
| Graph\_drag\_diff\_v | Plots the graph of trajectory with and without air drag at some initial velocity of payload |
| Graph\_vel\_drag | Plots the velocity vs time graph of a falling object with varying values of ‘k’ |
| Wind\_dist\_graph | Plots a comparison graph of the trajectory of falling object when the wind is supporting or opposing the flow of the object |
| Plot\_trajectories\_wind | Plots the trajectories of the falling object considering the drift of the object in z-axis and without any drift |

1. **Plots**: Contains the plots we plotted to support our equations. The plots have the same names as they scripts they belong to and are self-explanatory. **Plot\_wind\_normal\_diff** shows the difference in trajectories of final trajectory of the object with wind and trajectory without considering any wind.