Project1

- Copy the directory "Project1" from /export/home/thf272/ME5013/Fall2014/Project1 into your home directory: $HOME/ME5013/Fall2014/Exercises/InClass.

- In this directory 100 data files with name **Out***.dat** are the N^{th} file corresponding to N^{th} timestep containing following information:
  - First few lines contain summary and comments (2^{nd} line corresponds to current timestep).
  - There are 10 columns :

    id x y z fx fy fz vx vy vz

  - The first column is the ID of N^{th} element.
  - x, y, z are coordinates, f_x, f_y, f_z are force components, v_x, v_y, v_z are velocity components.

Task:1 Extract z displacements u_z for points with $ID = 710$ and $ID = 2201$ from these data files. Using **Numpy Statistics** determine the average and standard deviation of the individual displacements.

Task:2 Use **Gnuplot** or **Matplotlib** to plot: u_z vs. $Timesteps$.

Task:3 Extract $\max u_z$, $\min u_z$, $\max v_z$, $\min v_z$ and $\max f_z$, $\min f_z$ for all points.

Task:4 Create a **histogram** using numpy for values in the range: $[\min u_z, \max u_z]$. You can choose your **bin size**..

Task:5 Write a maximum **2 PAGE** report. Email the PDF file to rezwanur.rahman@utsa.edu. Titile of email: Project1

Due by: 5.00 pm on October 24^{th}, 2014.

Hint: $u_z = z_t - z_0$. Use numpy/scipy functions for the tasks.