100 POINTS **HOMEWORK 13** **DUE: 5/11/15**

For this assignment, you are to design a dynamic vibration absorber (DVA) to be placed on the top floor of a 5 story building, shown in Figure 1. Your task is to choose the parameters of this device: m_a, c_a, and k_a, to minimize the horizontal motion of the top floor where the DVA is attached.

Please consider wind loading on the structure. Please state the wind model that you are using and any assumptions made. You may assume the height of each story in the building is $h = 4\,\text{m}$.

Describe how you measure and evaluate the performance of your design. Which qualities are most important?

You need only simulate horizontal disturbances. You are given $m = 1000\,\text{kg}$, $k = 1{,}000{,}000\,\text{N/m}$, and modal damping ratio of $\zeta = 0.02$ for each mode.

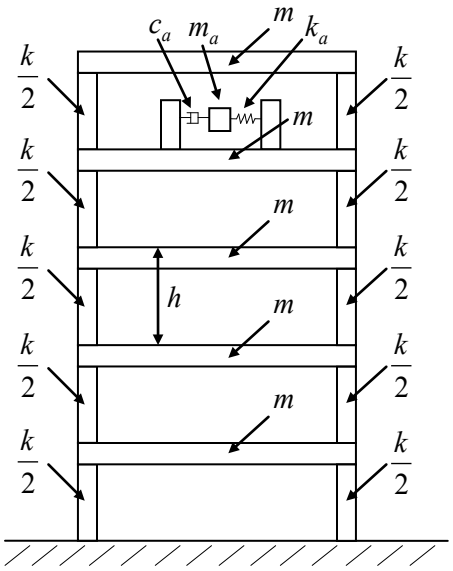

Figure 1

Please submit all written analysis and plots in hard-copy and all code by email by 5 pm on the due date.