

University of California, Berkeley
CEE C133/ME C180, Engineering Analysis Using the Finite Element Method
Spring 2009
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Lab 11

The geometry in the file *me180_lab11_geometry.mph* represents a bulk material with particles in it. Use it to answer the following questions:

- For a homogeneous material (already assigned in the file), plot the first three non-trivial mode shapes.
- Using the scripting capabilities of COMSOL and MATLAB, plot how the first non-trivial eigenfrequency changes as a function of $\frac{E_{particle}}{E_{bulk}}$ and $\frac{\rho_{particle}}{\rho_{bulk}}$.

Based on the data gathered above, and given a goal of increasing the first nontrivial eigenfrequency to be as high as possible, what metal would be best to be used as inclusions in the material? What if the type of material is unrestricted?

Turn this in to me in class on Thursday.