Northeastern University
Introduction to Microelectromechanical Systems (MEMS)
ECE G244 / MIM G260
Homework Set #7 (Due Friday, Nov. 10, 2006)

1) Determine the natural frequency of vibration for the translation of the accelerometer in HW #6 in the direction perpendicular to its plane.

2) Consider the micromirror in HW Set #6. Determine the natural frequencies in rotation (about the axis of the torsion bars) and in translation (perpendicular to the plane of the mirror). The mirror is 20 μm thick Silicon. Treat the mirror as rigid and remember to include the offset between the mirror center of mass and the axis of rotation.

3) The silicon nitride (silicon rich) beam is fixed at both ends. The prestress is 20 MPa. Determine the natural frequency.