

**AN ABSTRACT OF A THESIS**

**THE VIBRATION OF PIEZOELECTRIC SPHERICAL SHELLS**

**Sang-Yub Lee**

**Master of Science in Civil Engineering**

The free axisymmetric vibration of piezoelectric spherical shells are analyzed using a nine-node lagrangian finite element that was developed using the Hamilton's principle for a linear piezoelectric medium in spherical coordinates. The accuracy of the proposed analysis is verified by direct comparison with existing solutions. Results for nondimensional frequency were presented in tabular form for different geometric configurations and boundary conditions. In addition to this, the spheroidal and toroidal shape modes corresponding to the piezoelectric case were illustrated in graphical form. A discussion of results was given noting trends involving the effect of geometry and boundary condition on frequency and mode shape.