1004-35-254   **Maeve L McCarthy*** (`maeve.mccarthy@murraystate.edu`), Mathematics & Statistics, 6C
Faculty Hall, Murray, KY 42071. *Isospectral membranes: a connection between shape and density.*
It is well known that one cannot hear the shape of a drum. What about its density? A connection is made via conformal maps between vibrating membranes that are isospectral with respect to shape and those that are isospectral with respect to density. In particular, inhomogeneous circular membranes are constructed that are isospectral to polygonal membranes of uniform density via the Schwarz-Christoffel mapping. Although some corners of the polygons lead to singularities in the constructed densities, the densities are shown to be integrable. (Received January 25, 2005)