1161-47-85 **Boris P. Belinskiy**, **Don B. Hinton** and **Roger A. Nichols*** (roger-nichols@utc.edu), University of Tennessee at Chattanooga, Department of Mathematics, Dept. 6956, 615 McCallie Avenue, Chattanooga, TN 37403. *Spectral Analysis of Acoustic Black Holes.* Preliminary report.

A spectral analysis is performed for two-term Sturm–Liouville operators of the form $-\frac{1}{r}\frac{d}{dx}p\frac{d}{dx}$ on the interval $(0, 1]$, where the positive coefficients p and r satisfy power law decay to zero as $x \downarrow 0$. Specifically, we classify the endpoints, compute the essential spectrum, and determine conditions for the absence of positive eigenvalues of the corresponding self-adjoint extensions. Problems of this type arise, for example, in the study of the longitudinal vibrations of an elastic rod with cross sectional area that tapers to zero at one end and the transversal oscillations of an elastic string where the string tension and density taper to zero at one end. For certain powers of the decay, the time of propagation of a wave from $x = 1$ to $x = 0$ is infinite, so a wave does not reach the origin in finite time—a phenomenon known as an *acoustic black hole*. This talk is based on joint work with Boris P. Belinskiy (UTC) and Don B. Hinton (UTK). (Received August 11, 2020)