1070-53-263 **Thalia D. Jeffres*** (jeffres@math.wichita.edu), **Klaus Kirsten** and **Tianshi Lu**. *Zeta Function on a Surface of Revolution.* Preliminary report.

On a compact Riemannian manifold (M^n, g) with boundary, and taking Dirichlet boundary conditions, the zeta function of the Laplacian is given by

$$\zeta(s) = \sum_{\lambda_k \in \mathrm{Spec}(\Delta)} \lambda_k^{-s}.$$

This is convergent for complex values of s having real part greater than $n/2$. However, much information of geometric and physical significance is contained in extensions of $\zeta(s)$ to complex values of s lying outside this region.

On a compact surface of revolution, with Dirichlet boundary conditions, we are able to find formulas for the values of the holomorphic extension of the zeta function and its derivative at $s = 0$. These surfaces are geometrically interesting enough to exhibit the features typically contained in such expressions, while at the same time the rotational symmetry allows some explicit calculations. (Received February 14, 2011)