

**Meeting:** 1003, Atlanta, Georgia, SS 16A, AMS Special Session on Inverse Spectral Geometry, I

1003-58-1644      **David Borthwick\*** ([davidb@mathcs.emory.edu](mailto:davidb@mathcs.emory.edu)), Dept. of Math/CS, Emory University, Atlanta, GA 30322. *Eigenfunctions of the Laplacian on high tensor powers of a line bundle.*

We study the spectral theory of the Laplacian within the context of geometric quantization. That is, we start with a symplectic manifold with compatible Riemannian metric and a hermitian line bundle whose curvature is the symplectic form. This structure induces a Laplacian acting on tensor powers of the bundle, and the limit of high tensor power is the semiclassical regime in geometric quantization.

Our results relate certain spaces of eigensections of the Laplacian, with eigenvalues near zero, to the theory of generalized Szego projectors. The philosophy behind this connection is that these eigensections are the analog of holomorphic sections from the complex case.

We will highlight the inverse spectral application of these results: the metric and symplectic form can be recovered (asymptotically) from the eigensections by considering a particular embedding that they induce.

This is a report on joint work with Alejandro Uribe. (Received October 05, 2004)