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Gabe Khan* (khan.375@osu.edu), 218 W 18th Ave, Columbus, OH 43210. *Estimates on the Principle Eigenvalue of a Hermitian Manifold*. Preliminary report.

A natural geometric invariant on a Riemannian manifold is the spectrum of the Laplacian. In this talk, we consider a compact Hermitian manifold M and study the principle eigenvalue of the complex Laplacian on M . A natural question is to estimate the principle eigenvalue using the Hermitian and Riemannian geometry. We also show that, under some special conditions, we can establish estimates solely from the Riemannian geometry independent of the choice of complex structure. This provides an example of the connection between the complex and Riemannian geometry of a Hermitian manifold. This connection has manifested itself in many different theorems that show that under certain curvature conditions a Riemannian metric admits no complex structure. However, for our work, we assume that the metric admits some complex structure but try to establish results that are independent of the choice of complex structure. (Received February 06, 2017)