

1125-35-1074

**Minh Kha\*** (kha@math.tamu.edu), **Peter Kuchment** and **Yehuda Pinchover**. *On Riemann-Roch-Liouville theorem for elliptic PDEs on abelian coverings*. Preliminary report.

Taking a motivation from classical analysis rather than from algebraic geometry, Gromov and Shubin were able to generalize the classical Riemann-Roch theorem to solutions of general elliptic operators with point singularities and beyond. Their Riemann-Roch formula is a connection between two dimensions of two spaces that are dual in some sense. These spaces contain solutions that are allowed to have certain singularities and are required to have prescribed zeros such that the multiplicities are controlled. Meanwhile, the classical Liouville theorem states that the space of solutions of any given polynomial growth is finite dimensional. For periodic elliptic operators on abelian coverings, a Liouville type result was established by Kuchment and Pinchover. The dimensions of such spaces are also calculated explicitly in many cases. In this talk, we will present some results combining Riemann-Roch and Liouville theorems for elliptic operators on abelian coverings. This is joint work with Peter Kuchment and Yehuda Pinchover. (Received September 14, 2016)