
PARAMETRIC GEOMETRIC INEQUALITIES AND WEYL LAW FOR THE VOLUME SPECTRUM

Yevgeny Liokumovich

University of Toronto

February 5, 2024

The isoperimetric inequality and coarea inequality are basic tools in Geometric Analysis. But what if instead of applying them to a fixed submanifold we try to apply them to a continuous family of submanifolds? These "parametric" versions of classical inequalities are open problems. It turns out that they are closely related to the properties of the "volume spectrum" - volumes of minimal submanifolds that arise from Morse theory on the space of flat cycles. I will discuss proofs of these inequalities in low dimensions, their applications to Weyl law for the volume spectrum in higher codimension and existence results for minimal surfaces and stationary geodesic nets that follow from the Weyl law. The talk will be based on joint works with Marques and Neves, Larry Guth and Bruno Staffa.