Abstract:
We establish sharp Sobolev inequalities of order four on Euclidean d-balls for d greater than or equal to four. When d=4, our inequality generalizes the classical second order Lebedev-Milin inequality on Euclidean 2-balls. Our method relies on the use of scattering theory on hyperbolic d-balls. As an application, we characterize the extremals of the main term in the log-determinant formula corresponding to the conformal Laplacian coupled with the boundary Robin operator on Euclidean 4-balls. This is joint work with Alice Chang.