Titel: Quantitative estimates on the higher eigenvalues of the Laplacian near the ball

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Abstract:
It is well known that, among all subsets of R^N with given volume, the balls uniquely minimize the first eigenvalue of the Laplacian with Dirichlet boundary conditions. There is also a quantitative estimate on this inequality, namely, a set which is minimizing the first eigenvalue up to a small error is necessarily close to some ball, having Frankel asymmetry smaller than the square root of the small error. After a long, general introduction on this kind of problems, we will consider the following recent question: given a set whose first eigenvalue is close to the one of the ball, can we say that also its higher eigenvalues are close to the corresponding ones of the ball? We will provide a quantitative affirmative answer (joint work with D. Mazzoleni).