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Remainder Estimates in the Weyl Formula for the Neumann Laplacian on a Class of Planar Domains

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Abstract

We obtain estimates for the counting function of the Neumann Laplacian on a planar domain bounded by the graph of a lower semicontinuous integrable function. These estimates imply necessary and sufficient conditions for the validity of the classical one-term Weyl formula for the counting function and, under certain restrictions, give an order sharp remainder estimate in this formula. Additionally, we will cover estimates of entropy numbers of Sobolev embeddings on a planar domain bounded by the graph of a lower semicontinuous bounded function.