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Two-term asymptotically sharp bounds for eigenvalue means of the Laplacian

We consider the the eigenvalue spectrum of the Laplacian on a domain and use the averaged variational principle to produce lower-order corrections to the celebrated inequalities of Berezin-Li-Yau in the Dirichlet case and of Kröger in the Neumann case, which are sharp in the high-energy régime. We also produce complementary bounds, i.e., an analogue of the Berezin-Li-Yau inequality for the Neumann problem and an analogue of the Kröger inequalitty for the Dirichlet problem. This is joint work with Joachim Stubbe and Luigi Provenzano.