DISSERTATION
DEFENSE

Eigenvalues of the Laplace Operator on Quantum Graphs

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Abstract: This thesis focuses on estimates of eigenvalues on compact quantum graphs. On quantum graphs with all standard vertex condition, we prove an upper bound of eigenvalues based on the Davies inequality. We also prove some improvements of known upper bounds for eigenvalue gaps and ratios for metric trees. We finally establish a lower bound of eigenvalue gaps based on the idea of the weighted Cheeger constant on graphs with at least one Dirichlet vertex.

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