

MATEMATISKA INSTITUTIONEN
STOCKHOLMS UNIVERSITET
Avd. Matematik

SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Onsdagen den 10 september kl. 13.30 - 14.30 presenterar Gustav Karreskog sitt arbete "Universal bounds on the eigenvalues of compact finite quantum graphs" (30 högskolepoäng, avancerad nivå).

Handledare: Pavel Kurasov

Plats: Sal 32, hus 5, Kräftriket

Sammanfattning: In this Master Thesis we search for and find universal upper and lower bounds for all the eigenvalues of a quantum graph with delta-conditions. Only graphs where all strengths of the matching conditions are non-negative will be considered.

The spectrum of a quantum graph can be calculated using the Rayleigh quotient, which involves quadratic forms. As the quadratic form's domain depends on certain properties of the graph it is possible to derive upper and lower bounds on the eigenvalues of quantum graphs with delta-conditions by looking at how changes in the underlying graph affects the domain. We present a number of alterations preserving the total strength of the conditions and the total length of the graph, which will always shift the eigenvalues in a known direction. Combining these results with the lower bound given by A. Friedlander for quantum graphs with standard conditions we derive new universal upper and lower bounds for graphs with delta type matching conditions.

Alla intresserade är välkomna!