
Spectral properties of magnetic graphs

Stepan Manko^{*1}

¹Czech Technical University in Prague (Czech Technical University in Prague) – Břehová 7, 115 19
Prague 1, Czech Republic

Abstract

We analyze spectral properties of a quantum graph with a δ coupling in the vertices exposed to a homogeneous magnetic field perpendicular to the graph plane. We find the band-and-gap structure of the spectrum in the case when the chain exhibits a translational symmetry. Then we study the discrete spectrum in the gaps resulting from compactly supported coupling, magnetic or geometric perturbations. The method we use is based on translating the spectral problem for the differential equation in question into suitable difference equations. These results were obtained in collaboration with Pavel Exner.

^{*}Speaker