What is graph surgery? A short summary on spectral properties of linear evolution equations on a metric graphs

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Abstract

In the talk we focus on linear dynamical process, transport and diffusion, along the edges of a graph with appropriate transmission conditions in the vertices. The semigroup setting of a problem provoked a series of articles that joined the spectral properties of Laplacian on the metric graph with a spectrum of associated semigroup, and with the geometric structure of the underlying graph. In the talk we briefly present how the change of the geometry of a graph, known as *graph surgery*, can influence the spectrum. Then we present first observations on similar results for the operator of the first derivative on a metric graph.

References

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[2] G. Berkolaiko, J. Kennedy, P. Kurasov, D. Mugnolo, Surgery principles for the spectral analysis of quantum graphs (2019) Transactions of the American Mathematical Society, vol. 372, 5153 – 5197.