Einladung zum Vortrag
im Oberseminar Analysis

Non-self-adjoint boundary conditions
on graphs and domains

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Classical boundary conditions for elliptic operators include for instance Dirichlet, Neumann and Robin boundary conditions. Going from scalar valued to vector valued functions raises the complexity of the problem considerably. An early pathbreaking approach in this direction has been developed at the begining of the 20th century by the classical Birkhoff-Tamarkin theory for ordinary differential operators. A key issue is how to parametrize boundary conditions and how to ensure basic spectral properties. Here, I consider the model case of a Laplacian on a finite metric graph subject to general non-self-adjoint matching conditions imposed at the graph's vertices. A regularity criterium related to the Cayley transform of boundary conditions is discussed and spectral properties of such operators are investigated, in particular similarity transforms to self-adjoint operators and the generation of C0-semigroups. Concrete examples are discussed exhibiting that non-self-adjoint boundary conditions can yield to unexpected spectral features. How this can be transfered to the situation of partial differential operators on domains is outlined.

The talk is based on joint works with David Krejcirik (Czech Technical University in Prague), Petr Siegl (Queen's University Belfast) and Delio Mugnolo (FernUniversität Hagen).

Alle Interessierten sind herzlich eingeladen!

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