Hidden symmetries in non-self-adjoint graphs

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On finite metric graphs Laplace operators subject to general non-self-adjoint matching conditions imposed at graph vertices are considered. A regularity criterium related to the Cayley transform of boundary conditions is discussed and spectral properties of such regular operators are investigated, in particular similarity transforms to self-adjoint operators and generation of $C_0$-semigroups. Concrete examples are discussed exhibiting that non-self-adjoint boundary conditions can yield to unexpected spectral features.

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