

Calculating adjoints of operators on infinite graphs

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The notion of systems with integration by parts is introduced. With this the spatial operator of the transport equation and the spatial operator of the wave or heat equation on graphs can be defined. The considered graphs can consist of arbitrarily many edges and vertices if the lengths of the edges have strictly positive lower bounds. The respective adjoints of the operators on those graphs can be calculated and skew-selfadjoint operators can be classified via boundary values. With the work of R. Picard (Math. Meth. app. Sci. 32: 1768-1803 [2009]) we can therefore show well-posedness results for the respective evolutionary problems.