Space-time Methods for the Wave Equation

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For the discretisation of time-dependent partial differential equations usually explicit or implicit time stepping schemes are used. An alternative approach is the usage of space-time methods, where the space-time domain is discretised and the resulting global linear system is solved at once. In this talk the model problem is the scalar wave equation. First, a brief overview of known results for the wave equation is presented. Second, a space-time formulation is motivated and discussed.

Finally, numerical examples for a one-dimensional spatial domain are presented.

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