
Full discretization of linear wave equations on evolving surfaces

Abstract

We introduce a linear wave equation on evolving surfaces derived from the Hamilton principle of stationary action. We present a numerical scheme to solve the equation using an evolving surface finite element method proposed by Dziuk and Elliott and variational time integrators based on the discrete Hamilton principle. Stability and convergence of the full discretization are analyzed. Under suitable assumptions, we obtain optimal error estimates. Numerical experiments illustrate the behavior of the fully discrete method.

The talk is based on joint work with Ch. Lubich (Tübingen).