Y. Daikh, W. Chikouche

Spectral element discretization of the heat equation with variable diffusion coefficient

Abstract: We are interested in the discretization of the heat equation with a diffusion coefficient depending on the space and time variables. The discretization relies on a spectral element method with respect to the space variables and Euler's implicit scheme with respect to the time variable. A detailed numerical analysis leads to optimal a priori error estimates.

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