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Single and multi-interval Legendre τ -methods in time for parabolic equations. (English)

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Single and multi-interval spectral Legendre Petrov-Galerkin methods in time for the approximation of parabolic problems are considered. For the single interval spectral method in time, optimal error estimates in the L^2 norm are obtained. For the multi-interval spectral method in time, the L^2 -optimal error estimate is valid in spatial. Numerical results show the efficiency of the method.

Reviewer: [Wilhelm Heinrichs \(Essen\)](#)

MSC:

[65M70](#) Spectral, collocation and related methods for initial value and initial-boundary value problems involving PDEs

[35K05](#) Heat equation

[65M15](#) Error bounds for initial value and initial-boundary value problems involving PDEs

Cited in **18** Documents

Keywords:

interval decomposition; parabolic equation; spectral methods; optimal error estimate; tau method; spectral Legendre Petrov-Galerkin methods; numerical results

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