

Spectral Convergence of Mapped Chebyshev Methods

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ABSTRACT

In this work we clarify some fundamental questions on the spectral convergence of a mapped Chebyshev method proposed by Kosloff and Tal-Ezer and state some approximations properties of general mappings for Chebyshev points. We also present a simple way of determining the spatial resolution power of the mapped methods through the stationary phase technique. In particular, we prove a conjecture about the resolution power of the Tal-Ezer mapping made on [4] and the well known fact that π points per polynomial are needed in the original Chebyshev method.

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