

Yin, Zhaohua

A Hermite pseudospectral solver for two-dimensional incompressible flows on infinite domains. (English) [Zbl 1349.76576](#)
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Summary: The Hermite pseudospectral method is applied to solve the Navier-Stokes equations on a two-dimensional infinite domain. The feature of Hermite function allows us to adopt larger time steps than other spectral methods, but also leads to some extra computation when the stream function is calculated from the vorticity field. The scaling factor is employed to increase the resolution within the region of our main interest, and the aliasing error is fully removed by the *2/3-rule*. Several traditional numerical experiments are performed with high accuracy, and some related future work on physical applications of this program is also discussed.

MSC:

- [76M22](#) Spectral methods applied to problems in fluid mechanics
- [76D05](#) Navier-Stokes equations for incompressible viscous fluids
- [65M70](#) Spectral, collocation and related methods for initial value and initial-boundary value problems involving PDEs

Cited in 1 Document

Keywords:

[Hermite functions](#); [spectral methods](#); [Navier-Stokes equation](#)

Software:

[FHT](#)

Full Text: [DOI](#)

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