

Numerical Stability Analysis of the Wave Equation of Nachman, Smith and Waag

Betreuer: Richard Kowar

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Abstract

The first step of this work consists in an accuracy, a consistency and a stability analysis of the standard wave equation. Afterwards the same techniques are applied to the wave equation of Nachman, Smith and Waag (cf. [3]) for the simplest case, i.e. for one relaxation process. The lecture notes [2] and the book [1] will be very helpful for this bachelor work.

References

- [1] DALE R. DURRAN, Numerical Methods for Wave Equation in Geophysical Fluid Dynamics, *Springer-Verlag*, 1999.
- [2] J. MACKENZIE, Introduction to Computational Fluid Dynamics, *Lecture Notes*, University of Strathclyde and Glasgow, 1997.
- [3] A. I. Nachman and J. F. III Smith and and R. C. Waag: An equation for acoustic propagation in inhomogeneous media with relaxation losses. *J. Acoust. Soc. Am.* 88 (3), Sept. 1990.