



Mathematics > Numerical Analysis

Stability of ADI schemes for multidimensional diffusion equations with mixed derivative terms

Karel in 't Hout, Chittaranjan Mishra

(Submitted on 5 May 2012)

In this paper the unconditional stability of four well-known ADI schemes is analyzed in the application to time-dependent multidimensional diffusion equations with mixed derivative terms. Necessary and sufficient conditions on the parameter θ of each scheme are obtained that take into account the actual size of the mixed derivative coefficients. Our results generalize results obtained previously by Craig & Sneyd (1988) and In 't Hout & Welfert (2009). Numerical experiments are presented illustrating our main theorems.

Subjects: **Numerical Analysis (math.NA)**; Computational Finance (q-fin.CP)

Cite as: [arXiv:1205.1163v1](https://arxiv.org/abs/1205.1163v1) [math.NA]

Submission history

From: Karel in 't Hout [[view email](#)]

[v1] Sat, 5 May 2012 22:01:48 GMT (399kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

math.NA

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1205](#)

Change to browse by:

[math](#)

[q-fin](#)

[q-fin.CP](#)

References & Citations

- [NASA ADS](#)

Bookmark([what is this?](#))

