Re: request for algorithm

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- *Date*: Tue, 10 Jan 2006 10:02:43 +0000 (UTC)

In article <slrnds667g.2k2.ndros@xxxxxxxxxxxxxxxxxxxxxxxxx>,
ndros <ndros@xxxxxxxxxxxxxx> writes:
>Hi everybody, I am really desperate on this and would certainly appreciate
>any recommendations/suggestions. I am looking for practical problems
>that can be solved by means of N−dimensional iterative algorithms,
>N>=3 (e.g. 3D space domain, 2D space domain+time domain, 3D space
>domain+time domain etc), where in each iteration one computes the value
>at a point U(x,y,z,...) with the aid of "previous" points. For instance,
>U(x−1,y,z,...), U(x,y−1,z,...), U(x−1,y,z−1,...), U(x,y−2,z−3,...) are
>all welcome, but e.g. U(x+1,y,z,...), U(x−1,y+1,z,...) are not. Any
>algorithm name/URL/physical problem will do, I am willing to delve into
>the details myself.
>
>For instance, I have been looking into time/space discretizations of
>initial value problems/boundary value problems, such as the Poisson
>equation, but when using only previous points convergence gives me
>a rough time. I really don't mind reduced accuracy of the one−sided
>discretization compared to a central alternative one, as long as the
>algorithm ensures convergence. Any ideas?

a case there such a scheme is useful (and convergent under additional
assumptions on del_t/del_x) are first order hyperbolic systems
(d/dt) u = A (d/dx)u

with the eigenvalues of the matrix all strictly positive and pairwise different

(clearly nothing elliptic or parabolic)

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peter
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- ***References***:
  - ♦ ***request for algorithm***
    - ◊ *From:* ndros

- Prev by Date: ***request for algorithm***
- Next by Date: ***Javascript Latitude to Date function***
- Previous by thread: ***request for algorithm***
- Next by thread: ***Re: request for algorithm***
- Index(es):
    - ***Date***
    - ***Thread***