

Re: Solution of PDEs with guaranteed accuracy

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- *From:* "andrzej" <jedrek_2004@xxxxxxxxxxxx>
 - *Date:* 30 Jan 2006 04:32:50 -0800
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Please look at the applications of interval arithmetic.

This is the main web page:

<http://www.cs.utep.edu/interval-comp/main.html>

Some interesting software:

COSY. (<http://cosy.pa.msu.edu/>)

This software package is based on Taylor model and interval methods. It is intended for validated solution of such problems as ordinary differential equations, quadrature, range bounding, etc. It can either be used as a stand-alone program or via C++ and Fortran 90/95 frontends.

FADBAD/TADIFF (<http://www.imm.dtu.dk/fadbad.html>),

an automatic differentiation package, with applications to validated solution of ordinary differential equations.

Other software:

<http://www.cs.utep.edu/interval-comp/intsoft.html>

There are also some special algorithms.

Look for example at prof. Muhanna's papers:

<http://www.gtrep.gatech.edu/cee/faculty/muhanna.html>

<http://www.gtsav.gatech.edu/rec/recworkshop/proceedings/proceedings.html>

This paper is also interesting:

NEDIALKO S. NEDIALKOV

AN INTERVAL METHOD FOR INITIAL VALUE PROBLEMS IN
LINEAR ORDINARY DIFFERENTIAL EQUATIONS

<http://www.cas.mcmaster.ca/~nedialk/PAPERS/LINEAR/linear.pdf>

Regards,

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- **References:**

- ◆ ***Solution of PDEs with guaranteed accuracy***

- ◆ *From:* Jürgen Böhm

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