Lecture 9, Sci. Comp. for DPhil Students

Nick Trefethen, Tuesday 12.11.19

Today

- Demonstration of Chebfun

Handout

- Chebfun demo sheet

Announcements

- Assignment 2 returned at end of hour
- Thank you for last Friday's questionnaires.
  Many interesting comments. On average, people seem to find the pace and style about right.

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Chebfun is an open-source software package for numerical computing with functions. The idea is to overload Matlab's vectors and matrices to functions and operators. Chebfun can do almost anything in 1D and quite a bit in 2D and 3D.

See `www.chebfun.org`.

Among other things, Chebfun provides the most convenient tool available for finding roots of functions and solving ODE initial- and boundary-value problems.

There are two Chebfun-based textbooks:

Trefethen, *Approximation Theory and Approximation Practice*, SIAM, 2013. The first six chapters are freely available online at `http://people.maths.ox.ac.uk/trefethen/ATAP/`.

Trefethen, Birkisson, and Driscoll, *Exploring ODEs*, SIAM, 2018. The whole book is freely available online at `http://people.maths.ox.ac.uk/trefethen/ExplODE/`.