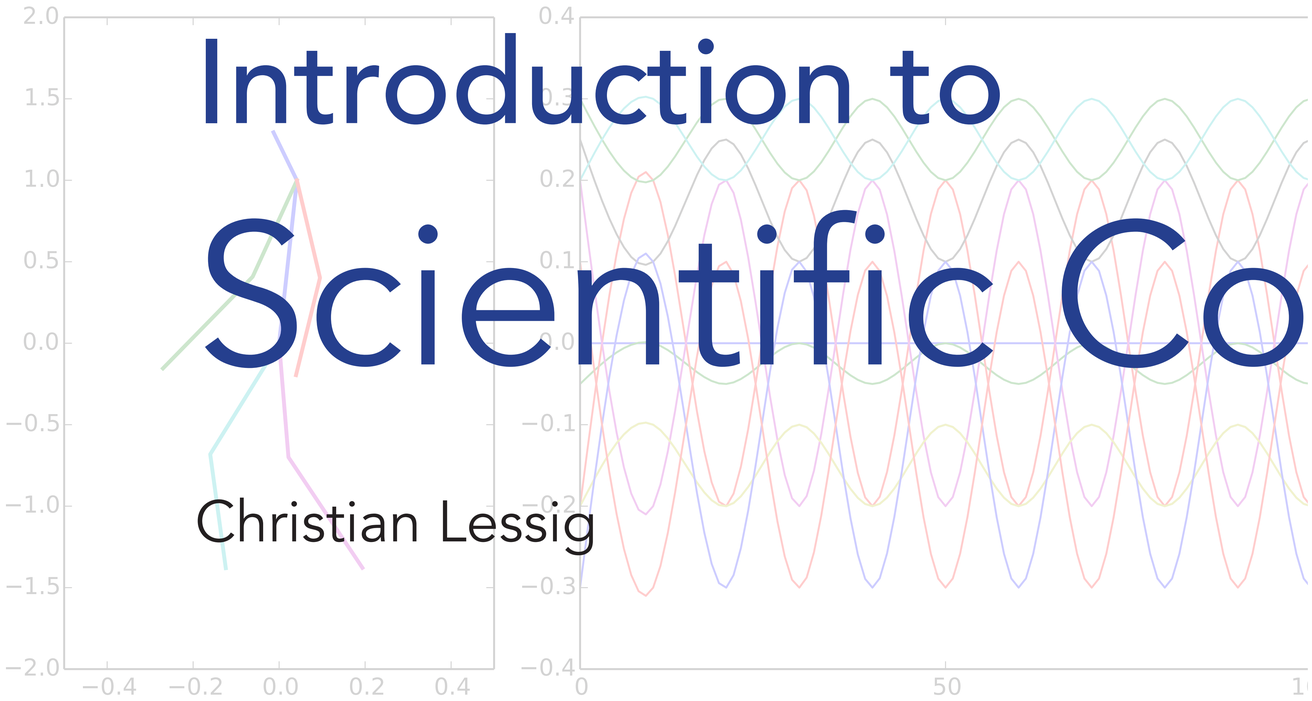

Introduction to Scientific Computing

Christian Lessig

About me

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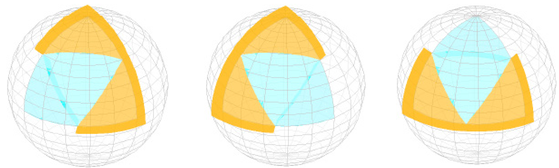

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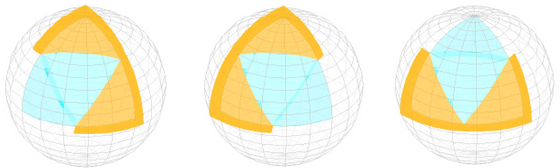

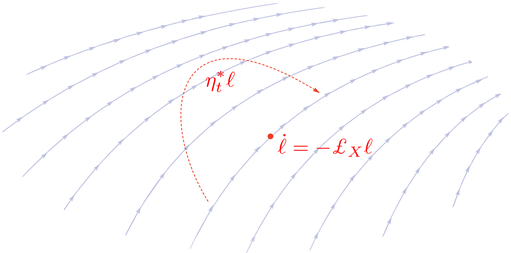

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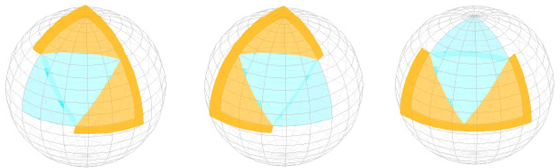

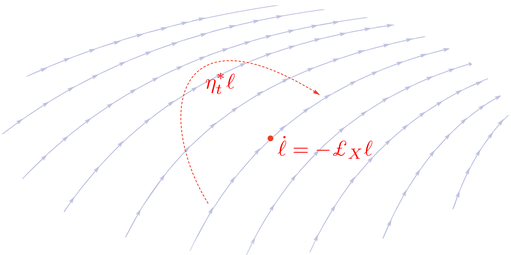

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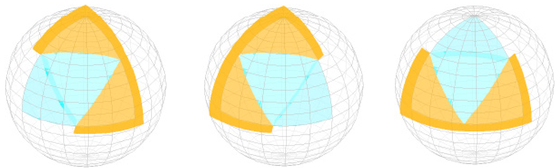

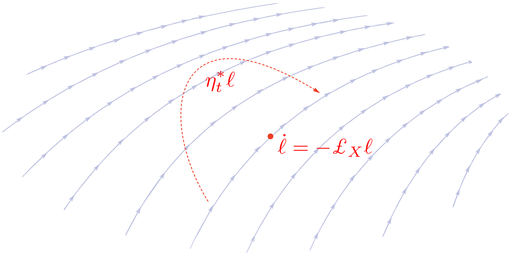

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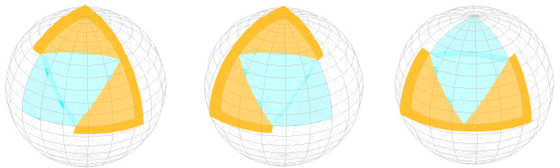
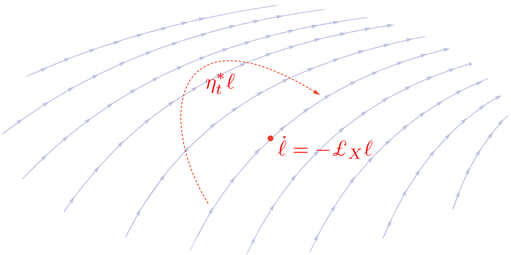
2016 — Jun-.Professor for Computer Graphics





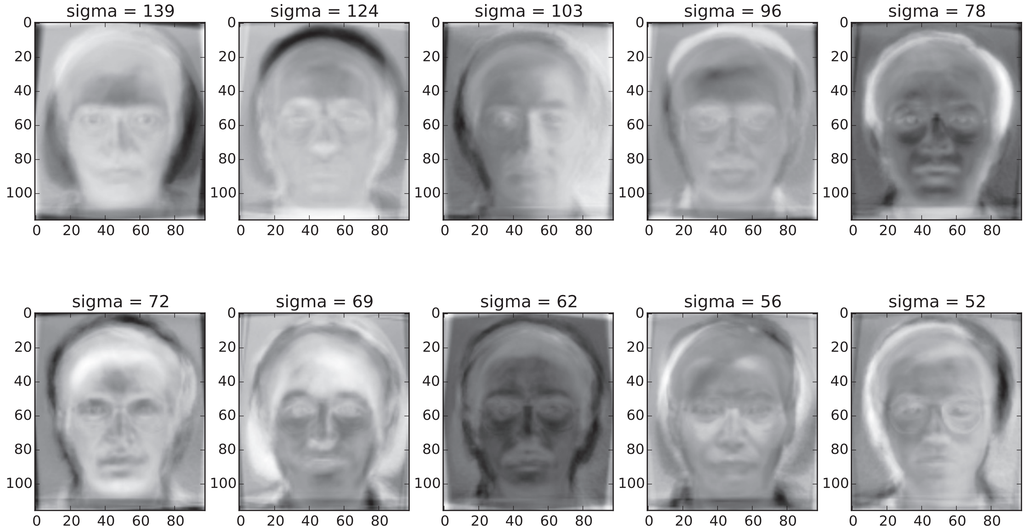
Research

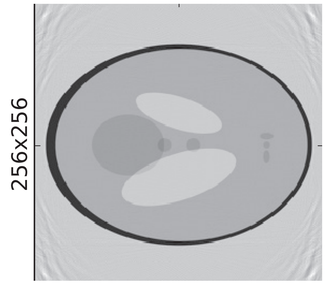
- Image synthesis
- Simulation of dynamical systems
- Applied harmonic analysis (wavelets etc.)
- Geometric mechanics (Hamiltonian systems etc.)

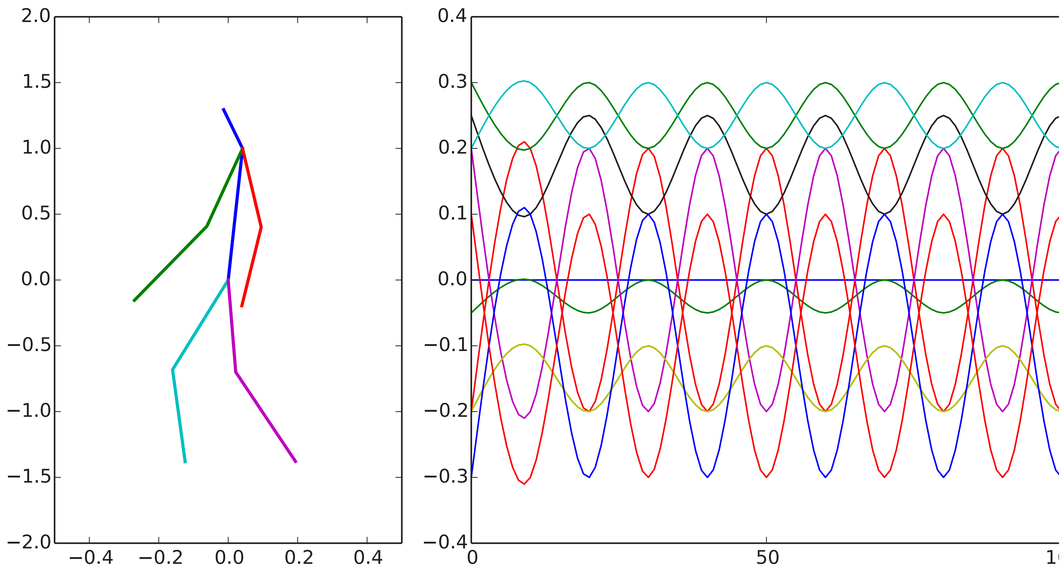
What is the course about?

Intro to Scientific computing

- How can “real-world” problems be implemented on a computer, e.g.
  - computer tomography
  - image recognition
  - character animation
  - sound editing
  - character recognition







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- Introduces basic tool set or fields such as computer graphics, computer vision, machine learning, computational engineering and science ...

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- Principal approach to map to computer: translate to or formulate as linear algebra problem. In this sense much of the course is also an numerical linear algebra course.
  - But in we will use most algorithms as black box and not worry about the robust implementation.

Course

- Lectures: Tuesdays, 13:00 - 15:00
- Tutorials: Thursdays, 11:00 - 13:00
- Office hours: Thursdays, 13:00 - 14:00
- Contact: wr@isg.cs.uni-magdeburg.de
- Website: http://graphics.cs.uni-magdeburg.de/teaching/2018/wr/

Course

- Assignments:
  - Required for exam admission
  - One assignments for each topic consisting of theory and programming part
- Programming language: python
- Exam: Written exam (most likely)

Literature

- G. Strang, *Lineare Algebra*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2003.
- G. Strang, *Wissenschaftliches Rechnen*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2010.
- W. Dahmen and A. Reusken, *Numerik für Ingenieure und Naturwissenschaftler*, second ed. Berlin, Heidelberg: Springer Berlin Heidelberg, 2008.
- T. Huckle and S. Schneider, *Numerik für Informatiker*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2002.