

April 7, 2012

## CURRICULUM VITAE FOR PER CHRISTIAN HANSEN

**Professor Per Christian Hansen** has worked with numerical regularization algorithms for 25 years, has published 80+ papers in leading journals, and his research monograph “Rank-Deficient and Discrete Ill-Posed Problems” is a widely used book on the subject. He has developed several related software packages, of which REGULARIZATION TOOLS (now in its 4th version) is a popular toolbox for analysis and solution of discrete inverse problems, which has been downloaded more than 4000 times from MATLAB’s File Exchange Central. He is one of the five Highly Cited mathematicians in Denmark, and his H-INDEX is 32 according to Google Scholar (April 7, 2012).

His current research projects involve *algorithms for tomographic reconstruction* (joint with DTU Mathematics and DTU Physics), *image deblurring algorithms* (joint with Aalborg University, MOSEK ApS, Emory University, Atlanta, USA, and Tufts University, Boston, USA), *potential field inversion for geomagnetic prospecting* (joint with University of Naples, Italy), and *scientific GPU computing*.

**Full name:** Per Christian Hansen.

**Title:** Professor in Scientific Computing, Section Head.

**Born:** July 9, 1957 in Nyborg, Denmark. **Citizenship:** Danish.

**Family:** Children: Martin S. Neukirch (born 1991) and Sara B. Neukirch (born 1994).

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**Specialization:** Numerical algorithms for inverse problems, imaging and tomography, matrix computations, subspace methods in signal processing, high-performance scientific computing.

### Education

- 1977–1982: MSc student at the Technical University of Denmark (DTU).
- 1982–1984: PhD student at the Department of Numerical Analysis, DTU.

### Degrees

- 1982: MSc in Electrical Engineering, DTU.
- 1985: PhD in Numerical Analysis, DTU.
- 1996: DrTechn in Numerical Analysis, DTU.

### Employments

- 1985: Research Fellow, Department of Numerical Analysis, DTU.
- 1985–1988: Research Associate, Astronomical Observatory, Univ. Copenhagen.
- 1988–1996: Senior Consultant, UNI•C.
- Since 1996: Professor, Department of Informatics and Mathematical Modelling, DTU.

### Employments Abroad

- 1986: Research Associate (6 months), Department of Computer Science, Stanford University, supported by a Fulbright Grant.
- 1988: Research Associate (1 month), Department of Mathematics, Oak Ridge National Laboratory, during the Numerical Linear Algebra Year.
- 1989: Research Associate (7 months), Dept. of Mathematics, UCLA.
- 1990: Visiting Scholar (1 month), Math. and Comp. Science Div., Argonne National Lab.

- 1992: Visiting Scholar (1 month), University of California, Berkeley.
- 2004: Visiting Scholar (1 month), Department of Mathematics and Computer Science, Emory University, Atlanta.
- 2006: Visiting Scholar (1 month), Dept. Mathematics, Tufts University, Medford.

#### **Awards**

- 1990: BIT Prize for distinguished paper on numerical analysis in the journal BIT.
- 1994: Statoil Prize in recognition of the work in numerical analysis.
- 2005: ISI Web of Knowledge award as most cited Danish mathematician.

#### **Publications**

- 3 books (+ 1 to be published in 2012).
- 1 edited book.
- 3 invited chapters.
- 84 papers in refereed journals.
- 49 conference papers etc.
- doctoral dissertation (defended at DTU 1996).
- 6 software packages.

#### **Management Experience**

- Head of Scientific Computing Section since 2001.
- Principal Investigator of FTP research projects since 2007.

#### **Professional Memberships**

- SIAM, Society for Industrial and Applied Mathematics (USA).
- Danish Academy of Technical Sciences.
- Danish Academy of Natural Sciences.

#### **Ph.D. Students**

- Susanne M. Balle (scientific computing; finished 1995).
- Søren Holdt Jensen (signal processing; finished 1995).
- Peter Søren Kirk Hansen (signal processing; finished 1998).
- Ole Møller Nielsen (scientific computing; finished 1998).
- Rasmus Munk Larsen (scientific computing; finished 1998).
- Tim Hultberg (scientific computing; finished 2000).
- Andreas Percy Schumacher (inverse acoustic problems; finished 2000).
- Preben Kidmose (signal processing; finished 2001).
- Ann-Charlotte Berglund (inversion algorithms; finished 2002).
- Thorkild F. Pedersen (signal processing; finished 2003).
- Michael Jacobsen (inversion algorithms; finished 2004).
- Jan M. Rasmussen (boundary control, with Dept. of Mathematics; finished 2004).
- Esben Høgh-Rasmussen (large-scale tomography; finished 2006).
- Toke Koldborg Jensen (iterative inversion algorithms; finished 2006).
- Peter Søndergaard (wavelet analysis, with Dept. of Mathematics; finished 2007).
- Hans Henrik B. Sørensen (computational nano-science; finished 2008).
- Jesper Rasmussen (boundary control, with Dept. of Mathematics; finished 2009).
- Jakob Heide Jørgensen (tomography).
- Anders Skajaa (convex optimization).

#### **Current Research Funding**

- High-Definition Tomography (PI – ERC advanced grant).
- CSI: Computational Science in Imaging (PI – FTP grant).
- Desktop Scientific Computing on Consumer Graphics Cards (PI – FTP grant).
- Electrical Impedance Tomography (VKR Post Doc).

### **Previous Funding**

- CAP: Center for Applications of Parallel computers (SNF grant).
- DIIG: Danish Interdisciplinary Inversion Group (SNF grant).
- DINA: Danish Informatics Network in the Agricultural Sciences.
- EPOS: Efficient Parallel algorithms in Optimization and Simulation (PI – SNF grant).
- MECOBS: Model., Est. and Control of Biotechnological Systems (NABIIT grant).
- nanoPar: Parallel Algorithms for Computational Nano-Science (FTP grant).
- NATO Collaborative Research Grants (twice) in signal processing algorithms.
- Partial Differential Equations and Applied Functional Analysis (SNF grant).
- SASI: Stabilization Algorithms for Large-Scale Inversion (PI – SNF grant).
- SCOSI: Scientific Comp. in Optimization, Simulation, and Inversion (SNF grant).
- WAVES: Wavelets in Audio/Visual Electronic Systems (STVF grant).