

List of Publications

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Books

- B.1 P. C. Hansen, V. Pereyra, and G. Scherer, *Least Squares Data Fitting with Applications*, Johns Hopkins University Press, 2012 (305 pages).
- B.2 P. C. Hansen, *Discrete Inverse Problems: Insight and Algorithms*, SIAM, Philadelphia, 2010 (213 pages).
- B.3 P. C. Hansen, J. G. Nagy, and D. P. O’Leary, *Deblurring Images: Matrices, Spectra, and Filtering*, SIAM, Philadelphia, 2006 (130 pages). Korean translation, Jin Publishing Co., 2007.
- B.4 P. C. Hansen, *Rank-Deficient and Discrete Ill-Posed Problems: Numerical Aspects of Linear Inversion*, SIAM, Philadelphia, 1998 (247 pages).

Edited Book

- E.1 P. C. Hansen, B. H. Jacobsen, and K. Mosegaard (Eds.), *Methods and Applications of Inversion*, Lecture Notes in Earth Science, Vol. 92, Springer, Berlin, 2000 (304 pages).

Invited Chapters

- I.1 P. C. Hansen and H. B. Nielsen, *Least squares solution of linear systems*; invited chapter in L. Hogben (Ed.), *Handbook of Linear Algebra*, 2. Ed., CRC Press, 2013.
- I.2 P. C. Hansen, H. B. Nielsen, C. Ankjærgaard, and M. Jain, *Two exponential models for optically stimulated luminescence*; invited chapter in V. Pereyra and G. Scherer (Eds.), *Exponential Data Fitting and Its Applications*, Bentham eBooks, 2010; pp. 128–144. <http://www.bentham.org/ebooks/9781608050482>.
- I.3 P. C. Hansen, *The L-curve and its use in the numerical treatment of inverse problems*; invited chapter in P. Johnston (Ed.), *Computational Inverse Problems in Electrocardiology*, WIT Press, Southampton, 2001; pp. 119–142.

Publications in International Journals

- 1 N. A. B. Riis, J. Frøsig, Y. Dong, and P. C. Hansen, *Limited-data X-ray CT for underwater pipeline inspection*, *Inverse Problems*; to appear.
- 2 I. G. Kazantsev, U. L. Olsen, H. F. Poulsen, and P. C. Hansen, *A spectral geometric model for Compton single scatter in PET based on the SSS approximation*, *Inverse Problems*; to appear.
- 3 T. Elfving and P. C. Hansen, *Unmatched projector/backprojector pairs: perturbation and convergence analysis*, *SIAM J. Sci. Comput.*, to appear.
- 4 V. Dahl, A. B. Dahl, Anders, and P. C. Hansen, *Computing segmentations directly from X-ray projection data via parametric deformable curves*, *Measurement Science and Technology*, to appear.

- 5 P. C. Hansen and J. S. Jørgensen, *AIR Tools II: algebraic iterative reconstruction methods, improved implementation*, Numerical Algorithms, to appear.
- 6 S. Soltani, M. S. Andersen, and P. C. Hansen, *Tomographic image reconstruction using training images*, J. Comp. Appl. Math., 313 (2017), pp. 243–258, DOI: 10.1016/j.cam.2016.09.019.
- 7 M. Salewski, B. Geiger, A. Jacobsen, P. C. Hansen + 12, *High-definition velocity-space tomography of fast-ion dynamics*, Nuclear Fusion, 56 (2016), DOI: 10.1088/0029-5515/56/10/106024.
- 8 T. Elfving, P. C. Hansen, and T. Nikazad, *Convergence analysis for column-action methods in image reconstruction*, Numer. Algo. 74 (2016), DOI: 10.1007/s11075-016-0176-x. Erratum (Fig. 3 was incorrect), p. 925, DOI: 10.1007/s11075-016-0232-6.
- 9 R. D. Kongskov, J. S. Jørgensen, H. F. Poulsen, and P. C. Hansen, *Noise robustness of a combined phase retrieval and reconstruction method for phase-constrast tomography*, J. Optical Society of America A, 33 (2016), pp. 447–454, DOI: 10.1364/JOSAA.33.000447.
- 10 S. Soltani, M. E. Kilmer, and P. C. Hansen, *A tensor-based dictionary learning approach to tomographic image reconstruction*, BIT Numer. Math., 56 (2016), pp. 1425–1454, DOI: 10.1007/s10543-016-0607-z.
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- 12 J. S. Jørgensen, E. Y. Sidky, P. C. Hansen, and X. Pan, *Empirical average-case relation between undersampling and sparsity in X-ray CT*, Inverse Problems and Imaging, 9 (2015), pp. 431–446, DOI: 10.3934/ipi.2015.9.431 (open access).
- 13 Y. Dong, H. Garde, and P. C. Hansen, *R³GMRES: including prior information in GMRES-type methods for discrete inverse problems*, Electronic Trans. Numerical Analysis, 42 (2014), pp. 136–146 (open access).
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- 15 H. H. B. Sørensen and P. C. Hansen, *Multicore performance of block algebraic iterative reconstruction methods*, SIAM J. Sci. Comp., 36 (2014), pp. C524–C546, DOI: 10.1137/130920642.
- 16 O. Borries, P. Meincke, E. Jørgensen, and P. C. Hansen, *Multilevel fast multipole method for higher order discretizations*, IEEE Trans. Antennas Propagat., 62 (2014), pp. 4695–4705.
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- 18 V. Paoletti, P. C. Hansen, M. F. Hansen, and M. Fedi, *A computationally efficient tool for assessing the depth resolution in large-scale potential-field inversion*, Geophysics, 79 (2014), pp. A33–A38, DOI: 10.1190/GEO2014-0017.1.
- 19 T. Elfving, P. C. Hansen, and T. Nikazad, *Semi-convergence properties of Kaczmarz’s method*, Inverse Problems, 30 (2014), DOI: 10.1088/0266-5611/30/5/055007.
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- 21 M. S. Andersen and P. C. Hansen, *Generalized row-action methods for tomographic imaging*, Numer. Algo., 67 (2014), pp. 121–144, DOI: 10.1007/s11075-013-9778-8.

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- 30 D. E. Petersen, S. Li, K. Stokbro, H. H. B. Sørensen, P. C. Hansen, S. Skelboe, and E. Darve, *A hybrid method for the parallel computation of Green’s functions*, J. Comp. Phys., 228 (2009), pp. 5020–5039.
- 31 H. H. B. Sørensen, P. C. Hansen, D. E. Petersen, S. Skelboe, and K. Stokbro, *Efficient wave function matching approach for quantum transport calculations*, Phys. Rev. B, 79 (2009), pp. 205322–205331.
- 32 P. C. Hansen, H. O. Sørensen, Z. Sükösd, and H. F. Poulsen, *Reconstruction of single-grain orientation distribution functions for crystalline materials*, SIAM J. Imaging Sci., 2 (2009), pp. 593–613.
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- 41 P. C. Hansen, T. K. Jensen, and G. Rodriguez, *An adaptive pruning algorithm for the discrete L-curve criterion*, J. Comp. Appl. Math., 198 (2007), pp. 483–492.
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Doctoral Dissertation

- P. C. Hansen, *Rank-Deficient and Discrete Ill-Posed Problems*, Doctoral Dissertation, Polyteknisk Forlag, 1996 (150 pages). Defended at the Technical University of Denmark May 13, 1996. A revised version is published by SIAM, Philadelphia.

Software Packages

- S.1 AIR TOOLS II. A Matlab Package of Algebraic Iterative Reconstruction Methods. The software is published in Numerical Algorithms (see ref. 5 above) and is available from Netlib in the directory `numeralgo/na47`. It is an improved and expanded version of the code published in J. Comp. Appl. Math. (see ref. 26 above).
- S.2 TVREG. Software for Total Variation Regularization. The accompanying paper is published in BIT (see ref. 24 above), and the software is available from `www.imm.dtu.dk/~pch/TVReg`.
- S.3 MXTV. Software for total variation image reconstruction via first-order methods. The software is published in Numerical Algorithms (see ref. 29 above) and is available from Netlib in the directory `numeralgo/na28`.
- S.4 REGULARIZATION TOOLS, VERSION 4.0. A Matlab Package for Analysis and Solution of Discrete Ill-Posed Problems, Version 4.0 for Matlab 7.3, Informatics and Mathematical Modelling, Technical Univ. of Denmark, September 2007 (126 pages). The software is published in Numerical Algorithms (see refs. 37 and 76 above) and is available from Netlib in the directory `numeralgo/na4`.
- S.5 UTV EXPANSION PACK. R. D. Fierro and P. C. Hansen, *UTV Expansion Pack: Special-purpose rank-revealing algorithms*, Version 1.0 for Matlab 7.0, Report IMM-TR-2004-6, Informatics and Mathematical Modelling, Technical Univ. of Denmark, April 2004 (68 pages). The software is published in Numerical Algorithms (see ref. 47 above) and is available from Netlib in the directory `numeralgo/na22`.
- S.6 UTV TOOLS R. D. Fierro, P. C. Hansen and P. S. K. Hansen, *UTV Tools. Matlab Templates for Rank-Revealing UTV Decompositions*, Version 1.1 for Matlab 7.0, Report IMM-REP-99-2, Informatics and Mathematical Modelling, Technical Univ. of Denmark, January 1999 (97 pages). The software is published in Numerical Algorithms (see ref. 57 above) and is available from Netlib in the directory `numeralgo/na16`.

Publications in Conference Proceedings etc.

- P.1 H. M. Kjer, Y. Dong, and P. C. Hansen, *User-friendly simultaneous tomographic reconstruction and segmentation with class priors*, *Scale Space and Variational Methods in Computer Vision – 6th International Conference, SSVM 2017, Proceedings*, F. Lauze, Y. Dong, and A. B. Dahl (Eds.), Springer, 2017.
- P.2 I. G. Kazantsev, U. L. Olsen, H. F. Poulsen, and P. C. Hansen, *A spectral geometrical model for Compton scatter tomography based on the SSS approximation*, Proc. 4th International Conference on Image Formation in X-Ray Computed Tomography, July 18–22, Bamberg, Germany, pp. 577–580.
- P.3 O. Borries, H.-H. Viskum, P. Meincke, E. Jørgensen, P. C. Hansen, and C. H. Schmidt, *Analysis of electrically large antennas using fast physical optics*, Proc. 9th European Conference on Antennas and Propagation (EuCAP 2015), IEEE, pp. 1–5.
- P.4 O. Borries, P. C. Hansen, S. B. Sørensen, P. Meincke, and E. Jørgensen, *Gaussian translation operator for multi-level fast multipole method*, Proc. 2014 IEEE Antennas and Propagation Society International Symposium, Memphis, TN, 2014; pp. 254–258.
- P.5 O. Borries, H. H. B. Sørensen, B. Dammann, E. Jørgensen, P. Meincke, S. B. Sørensen, and P. C. Hansen, *Reflector antenna analysis using physical optics on graphics processing units*, Proc. EuCAP 2014, The 8th European Conference on Antennas and Propagation, The Hague, The Netherlands, 2014. pp. 351–355.
- P.6 O. Borries, P. Meincke, E. Jørgensen, S. B. Sørensen, and P. C. Hansen, *Improved multilevel fast multipole method for higher-order discretizations* Proc. EuCAP 2014, The 8th European Conference on Antennas and Propagation, The Hague, The Netherlands, 2014. pp. 3610–3614.
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- P.10 J. H. Jørgensen, P. C. Hansen, E. Y. Sidky, I. S. Reiser, and X. Pan, *Toward optimal X-ray flux utilization in breast CT*; in proceedings of 11th Fully 3D Meeting, Potsdam, Germany, July 2011.
- P.11 F. Delbary, P. C. Hansen, and K. Knudsen, *A direct numerical reconstruction algorithm for the 3D Calderón problem*, International Conference on Inverse Problems, 2010, Hong Kong; Journal of Physics: Conference Series, 290 (2011), 012003.
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