# Books (3)

[1] J. Modersitzki. *FAIR: Flexible Algorithms for Image Registration.* SIAM, Philadelphia, 2009. (To appear), [bib|FAIR page].

[2] J. Modersitzki. *Numerical Methods for Image Registration.* Oxford University Press, New York, 2004. [bib|book page].

[3] J. Modersitzki. *Polynomiale Iterationsverfahren zur Lösung indefiniter linearer Gleichungssysteme mit optimalen Iterierten und kurzer Rekursion.* Verlag an der Lottbek, Ammersbek bei Hamburg, 1995. [bib].
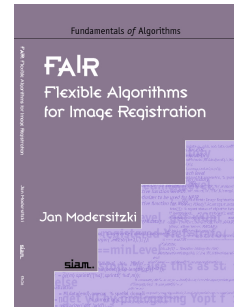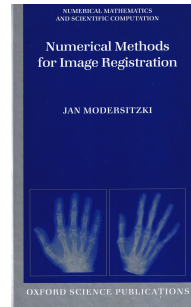
Work in Progress (2)

[4] O. Peshko, J. Modersitzki, T. Terlaky, C. Menard, T. Craig, and D. Moseley. Automatic localization and tracking of fiducial markers for organ motion analysis in image-guided radiation therapy. pages 1–4. *Proceedings of the SPIE 2010, Medical Imaging. (Submitted).*

[5] *C. Pöschl, J. Modersitzki, and O. Scherzer. A variational setting for volume constrained image registration. Technical report, NFN 092: Joint Research Program of Industrial Geometry, February 2009.*

Research Papers in Peer Reviewed Journals (27)

[6] E. Haber, S. Heldmann, and J. Modersitzki. A framework for image-based constrained registration with an application to local rigidity. *Linear Algebra and its Applications*, 431:459–470, 2009. [abstract|bib].

[7] E. Haber, S. Heldmann, and J. Modersitzki. Adaptive mesh refinement for nonparametric image registration. *SIAM Journal on Scientific Computing*, 30(6):3012–3027, 2008. DOI: 10.1137/070687724, [abstract|bib|paper].

[8] B. Fischer and J. Modersitzki. Ill-posed medicine – an introduction to image registration. *Inverse Problems*, 24:1–19, 2008. [abstract|bib|paper].

[9] J. Modersitzki. FLIRT with rigidity – image registration with a local non-rigidity penalty. *IJCV*, pages 153–163, 2008. DOI: 10.1007/s11263-007-0079-3, [abstract|bib|paper].

[10] E. Haber, S. Heldmann, and J. Modersitzki. An octree method for parametric image registration. *SIAM Journal on Scientific Computing*, 29(5):2008–2023, 2007. DOI: 10.1137/060662605, [abstract|bib|paper].

[11] E. Haber and J. Modersitzki. Intensity gradient based registration and fusion of multi-modal images. *Methods of Information in Medicine, Schattauer Verlag, Stuttgart*, 46(3):292–299, 2007. [abstract|bib|paper].

[12] E. Haber and J. Modersitzki. COFIR: coarse and fine image registration. In LT Biegler, O Ghattas, M Heinkenschloss, D Keyes, and B van Bloemen Waanders, editors, *Real-Time PDE-Constrained Optimization*, pages 37–49. SIAM, Philadelphia, 2007. [abstract|bib|paper].

[13] O. Schmitt, J. Modersitzki, S. Heldmann, S. Wirtz, and B. Fischer. Image registration of sectioned brains. *IJCV*, 73(1), 2007. DOI: 10.1007/s11263-006-9780-x, [abstract|bib|paper].

[14] J. Modersitzki and S. Wirtz. Registration of histological serial sectionings. In Otmar Scherzer, editor, *Mathematical Models for Registration and Applications to Medical Imaging. Mathematics in Industry*, New York, 2006. Springer.
[abstract|bib|paper].

[15] E. Haber and J. Modersitzki. A multilevel method for image registration. *SIAM J. Sci. Comput.*, 27(5):1594–1607, 2006.
[abstract|bib|paper].

[16] E. Haber and J. Modersitzki. Image registration with a guaranteed displacement regularity. *IJCV*, 1, 2006. DOI: 10.1007/s11263-006-8984-4,
[abstract|bib|paper].

[17] O. Schmitt, R. Eggers, and J. Modersitzki. Videomicroscopy, image processing, and analysis of whole histologic sections of the human brain. *Microscopy Research and Technique*, 66:203–218, 2005.
[abstract|bib|paper].

[18] O. Schmitt, J. Modersitzki, S. Heldmann, S.Wirtz, L. Hömke, W.Heide, and A. Wree. Three-dimensional cytoarchitectonic analysis of the posterior bank of the human precentral sulcus. *Anatomy and Embryology*, DOI 10.1007:1–14, 2005.
[bib|paper].

[19] T.L. Faber, J. Modersitzki, R.D. Folks, and E.V. Garcia. Detecting changes in serial myocardial perfusion spect – a simulation study. *J Nucl Cardiol*, 12:302–310, 2005.
[abstract|bib|paper].

[20] B. Fischer and J. Modersitzki. Large scale problems arising from image registration. *GAMM Mitteilungen*, 27(2):104–120, 2004.
[abstract|bib|paper].

[21] B. Fischer and J. Modersitzki. A unified approach to fast image registration and a new curvature based registration technique. *Linear Algebra and its Applications*, 380:107–124, 2004.
[abstract|bib|paper].

[22] B. Fischer and J. Modersitzki. Intensity based image registration with a guaranteed one-to-one point match. *Methods of Information in Medicine, Schattauer Verlag, Stuttgart*, 43:327–330, 2004.
[abstract|bib|paper].

[23] E. Haber and J. Modersitzki. Numerical methods for volume preserving image registration. *Inverse Problems, Institute of Physics Publishing*, 20(5):1621–1638, 2004.
[abstract|bib|paper].

[24] B. Fischer and J. Modersitzki. Curvature based image registration. *J. of Mathematical Imaging and Vision*, 18(1):81–85, 2003.
[abstract|bib|paper].

[25] O. Schmitt, A. Wree, L. Dümbgen, J. Modersitzki, L. Hömke, S. Heldmann, S. Bock, J.W. Heide, and D. Kömpf. Spatial location of the human frontal eye field. *Ann. Anal.*, 185:320–321, 2003.
[bib].

[26] R.B. Dougherty, V. Koch, A. Brewer, B. Fischer, J. Modersitzki, D. Bavelier, H.J. Neville, and B.A. Wandell. Visual field representations and locations of visual areas V1/2/3 in human visual cortex. *Journal of Vision*, 3(10):586–598, 2003.
[abstract|bib|paper].

[27] B. Fischer and J. Modersitzki. Fast diffusion registration. *AMS Contemporary Mathematics, Inverse Problems, Image Analysis, and Medical Imaging*, 313:117–129, 2002.
[abstract|bib|paper].

[28] J. Modersitzki, G. Lustig, O. Schmitt, and W. Obelöer. Elastic registration of brain images on large PC-clusters. *Elsevier, Future Generation Computer Systems*, 18:115–125, 2001.
[bib].

[29] G.L.G. Sleijpen, H.A. van der Vorst, and J. Modersitzki. Differences in the effects of rounding errors in Krylov solvers for symmetric indefinite linear systems. *SIMAX*, 22(3):726–751, 2000.

[bib].

[30] B. Fischer and J. Modersitzki. Fast inversion of matrices arising in image processing. *Num. Algo.*, 22:1–11, 1999.
[bib|paper].

[31] J. Modersitzki and G. Opfer. Faber versus minimal polynomials on annular sectors. In RM Ali, R Ruscheweyh, and EB Saff, editors, *Comp. Methods and Function Theory*, pages 243–265, 1995.
[bib].

[32] B. Fischer and J. Modersitzki. An algorithm for complex linear approximation based on semi-infinite programming. *Numerical Algorithms*, 5:287–297, 1993.
[bib].

Peer Reviewed Proceedings Papers (13)

[33] E. Haber, S. Heldmann, and J. Modersitzki. A scale-space approach to landmark constrained image registration. In *Proceedings of the Second International Conference on Scale Space Methods and Variational Methods in Computer Vision (SSVM)*, pages 1–12. Springer LNCS, 2009.
[abstract|bib|paper].

[34] J. Modersitzki and S. Wirtz. Combining homogenization and registration. In Josien P.W. Pluim et al., editors, *Biomedical Image Registration: Third International Workshop, WBIR 2006*, LNCS, pages 257 – 263. Springer, 2006.
[abstract|bib|paper].

[35] E. Haber and J. Modersitzki. Intensity gradient based registration and fusion of multi-modal images. In C Barillot, DR Haynor, and P Hellier, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2006*, volume 3216, pages 591–598. Springer LNCS, 2006.
[abstract|bib|paper].

[36] B. Fischer and J. Modersitzki. Image fusion and registration – a variational approach. In E Krause, YI Shokin, M Resch, and N Shokina, editors, *Computational Science and High Performance Computing II*, Notes on Numerical Fluid Mechanics and Multidisciplinatory Design, 91, pages 193–205. Springer, 2006.
[abstract|bib|paper].

[37] E. Haber and J. Modersitzki. A scale space method for volume preserving image registration. In *Proceedings of the 5th International Conference on Scale Space and PDE Methods in Computer Vision*, pages 1–8, 2005.
[abstract|bib|paper].

[38] E. Haber and J. Modersitzki. Volume preserving image registration. In C Barillot, DR Haynor, and P Hellier, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2004*, volume 3216, pages 591–598. Springer LNCS, 2004.
[abstract|bib|paper].

[39] B. Fischer and J. Modersitzki. Combining landmark and intensity driven registrations. *PAMM*, 3:32–35, 2003.
[bib|paper].

[40] E. D'Agostino, J. Modersitzki, F. Maes, D. Vandermeulen, B. Fischer, and P. Suetens. Free-form registration using mutual information and curvature regularization. In JC Gee, JBA Maintz, and MW Vannier, editors, *2nd International Workshop on Biomedical Image Registration 2003*, LNCS 2717, pages 11–20. Springer, 2003.
[bib|paper].

[41] B. Fischer and J. Modersitzki. FLIRT: a Flexible Image Registration Toolbox. In JC Gee, JBA Maintz, and MW Vannier, editors, *2nd International Workshop on Biomedical Image Registration 2003*, LNCS 2717, pages 261–270. Springer, 2003.
[abstract|bib].

[42] O. Schmitt, J. Modersitzki, and W. Obelöer. The Human NeuroScanning Project. *NeuroImage*, 9:p. 22, 1999.

[43] O. Schmitt, R. Eggers, J. Modersitzki, W. Obelöer, and G. Lustig. Multidimensional profiling of elastic deformed particle systems – a first approach. In *Book of Abstracts of the First Vogt-Brodman Symposium: Perspectives of Architectonic Brain Mapping*, page 75, 1999.

[44] O. Schmitt, R. Eggers, J. Modersitzki, W. Obelöer, and G. Lustig. The total number of cells in serial sections of a human brain. In *X-th International Congress for Stereology, University of Melbourne*, 1999.

[45] J. Modersitzki, W. Obelöer, O. Schmitt, and G. Lustig. Elastic matching of very large digital images on high performance clusters. In *High-Performance Computing and Networking – 7th International Conference, HPCN Europe 1999*, pages 141–149. Springer, LNCS 1593, 1999.

Proceedings Papers (24)

[46] Hanno Schumacher, Jan Modersitzki, and Bernd Fischer. Reconstruction and motion correction in SPECT imaging – a combined approach. In *Proceedings of the 12th Korea-Germany joint workshop on Advanced Medical Image Processing*, pages 32 –41, Munich, 2009.

[47] S. Barendt, B. Fischer, and J. Modersitzki. A kernel representation for exponential splines with global tension. In Jaakko T. Astola, Karen O. Egiazarian, Nasser M. Nasrabadi, and Syed A. Rizvi, editors, *Proceedings of the SPIE 2009, Image Processing: Algorithms and Systems VII, San Jose*, volume 7245, page 72450I. SPIE, 2009. Accepted for publication,
[abstract|bib|paper].

[48] K. Ens, F. Wenzel, S. Young, S. Rensich, J. Modersitzki, and B. Fischer. Design of a synthetic database for the validation of nonlinear registration and segmentation of MR brain images. In JM Fitzpatrick and M Sonka, editors, *Proceedings of the SPIE 2009, Medical Imaging*. SPIE, 2009.
[abstract|bib|paper].

[49] K. Ens, S. Heldmann, J. Modersitzki, and B. Fischer. Improving a registration and/or segmentation task by incorporating characteristics of the displacement field. In JM Fitzpatrick and M Sonka, editors, *Proceedings of the SPIE 2009, Medical Imaging*. SPIE, 2009.
[abstract|bib|paper].

[50] B. Fischer, E. Haber, and J. Modersitzki. Mathematics meets medicine – an optimal alignment. *SIAG/OPT Views and News*, 19(2):1–7, 2008.
[abstract|bib|paper].

[51] T. Lange, N. Papenberg, S. Heldmann, J. Modersitzki, B. Fischer, and PM Schlag. 3D ultrasound-CT alignment of the liver using combined landmark - intensity registration. volume 3, pages 79–88, 2008. DOI: 10.1007/s11548-008-0180-2,
[abstract|bib|paper].

[52] N. Papenberg, T. Lange, J. Modersitzki, P.M. Schlag, and B. Fischer. Image registration for CT and intra-operative ultrasound data of the liver. In MI Miga and KR Cleary, editors, *Proceedings of the SPIE*, volume 6918, pages 1–5. SPIE, 2008. DOI:10.1117/12.770105,
[abstract|bib|paper].

[53] N. Papenberg, J. Modersitzki, and B. Fischer. Registrierung im Fokus. In T Tolxdoff et al., editors, *Bildverarbeitung für die Medizin*, pages 138–142. Springer, 2008.
[abstract|bib|paper].

[54] S. Barendt, J. Modersitzki, and B. Fischer. Ein numerisches Verfahren zur Kalibrierung von Gammakameras. In A Horsch et al., editors, *Bildverarbeitung für die Medizin*, pages 449–453. Springer, 2007.
[abstract|bib|paper].

[55] N. Papenberg, H. Schumacher, S. Heldmann, S. Wirtz, S. Bommersheim, K. Ens, J. Modersitzki, and B. Fischer. A fast and flexible image registration toolbox – design and implementation of the general approach. In A Horsch et al., editors, *Bildverarbeitung für die Medizin*, pages 106–110. Springer, 2007.
[abstract|bib|paper].

[56] J. Modersitzki. Image registration with local rigidity constraints. In A Horsch et al., editors, *Bildverarbeitung für die Medizin*, pages 444–448. Springer, 2007.
[abstract|bib|paper].

[57] E. Haber and J. Modersitzki. Beyond mutual information: A simple and robust alternative. In HP Meinzer et al., editors, *Bildverarbeitung für die Medizin 2005*, pages 350–354. Springer, 2005.
[abstract|bib|paper].

[58] B. Fischer and J. Modersitzki. On medical image registration. In B de Moor and B Motmans, editors, *Proceedings of the 16th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2004), Leuven*, pages 1–5. Schattauer Verlag, Stuttgart, 2004.
[bib].

[59] S. Heldmann, O. Mahnke, D. Potts, J. Modersitzki, and B. Fischer. Fast computation of mutual information in a variational image registration approach. In T Tolxdorff et al., editors, *Bildverarbeitung für die Medizin 2004*, pages 448–452. Springer, 2004.
[abstract|bib|paper].

[60] S. Kabus, T. Netsch, B. Fischer, and J. Modersitzki. B-spline registration of 3d images with Levenberg-Marquardt optimization. In JM Fitzpatrick and M Sonka, editors, *Proceedings of the SPIE 2004, Medical Imaging, San Diego, February 14-19, 2004*, volume 5370, pages 304–313. SPIE, 2004.
[abstract|bib|paper].

[61] S. Wirtz, B. Fischer, J. Modersitzki, and O. Schmitt. Super-fast elastic registration of histologic images of a whole rat brain for three-dimensional reconstruction. In JM Fitzpatrick and M Sonka, editors, *Proceedings of the SPIE 2004, Medical Imaging, San Diego, February, 14-19, 2004*, volume 5370, pages 328–334. SPIE, 2004.
[abstract|bib|paper].

[62] J. Modersitzki and B. Fischer. Optimal image registration with a guaranteed one-to-one point match. In T Wittenberg et al., editors, *Bildverarbeitung für die Medizin 2003*, pages 1–5. Springer, 2003.
[abstract|bib|paper].

[63] B. Fischer and J. Modersitzki. Fast image registration – a variational approach. In G Psihoyios, editor, *Proceedings of the International Conference on Numerical Analysis & Computational Mathematics (NACoM-2003)*, pages 69–74, 2003.
[abstract|bib|paper].

[64] B. Fischer and J. Modersitzki. Combination of automatic non-rigid and landmark based registration: the best of both worlds. In M Sonka and JM Fitzpatrick, editors, *Medical Imaging 2003: Image Processing*, pages 1037–1048. Proceedings of the SPIE 5032, 2003.
[abstract|bib|paper].

[65] B. Fischer and J. Modersitzki. Fast curvature based registration of MR-mammography images. In M Meiler et al., editors, *Bildverarbeitung für die Medizin*, pages 139–143. Springer, 2002.
[abstract|bib|paper].

[66] B. Fischer and J. Modersitzki. Curvature based registration with applications to MR-mammography. In PMA Sloot, CJK Tan, JJ Dongarra, and AG Hoekstra, editors, *Computational Science – ICCS 2002*, pages 203–206. Springer, LNCS 2331, 2002.
[abstract|bib|paper].

[67] J. Modersitzki, O. Schmitt, and B. Fischer. Effiziente, nicht-lineare Registrierung eines histologischen Serienschnittes durch das menschliche Gehirn. In H Handels et al., editors, *Bildverarbeitung für die Medizin 2001*, pages 179–183. Springer, 2001.
[bib].

[68] O. Schmitt and J. Modersitzki. Registrierung einer hochaufgelösten histologischen Schnittserie eines Rattenhirns. In H Handels et al., editors, *Bildverarbeitung für die Medizin 2001*, pages 174–178. Springer, 2001.
[bib].

[69] B. Fischer and J. Modersitzki. A super fast registration algorithm. In H Handels et al., editors, *Bildverarbeitung für die Medizin 2001*, pages 169–173. Springer, 2001.
[bib|paper].

Patents (2)

[70] U. Hofmann, U. Knopp, B. Fischer, and J. Modersitzki. *Navigationshilfsvorrichtung für neurochirurgische Eingriffe am menschlichen Gehirn.* Deutsches Patentamt, Feb. 2005. AZ 10242 802.

[71] B. Fischer and J. Modersitzki. *Über ein Verfahren der Bildregistrierung.* Deutsches Patentamt, Nov. 2002. AZ 10253 784.4.

Software Packages (3)

[72] Jan Modersitzki. FAIR – Flexible Algorithms for Image Registration.
http://www.cas.mcmaster.ca/~fair, 2008.

[73] SAFIR research group. FLIRT – a FLexible Image Registration Toolbox.
http://www.math.uni-luebeck.de/safir/FLIRT-Download/index.shtml, 2006.

[74] B. Fischer and J. Modersitzki. Coca: COmplex Chebyshev Approximation.
http://www.math.uni-luebeck.de//modersitzki/COCA/COCA.html, 1991.

URL: http://www.cas.mcmaster.ca/~modersit/Pubs/TeX/PubsJanModersitzki.pdf