

Publications

Peer-reviewed publications:

- [1] E. Heath, **J. Unkelbach**, and U. Oelfke. Incorporating uncertainties in respiratory motion into 4D treatment plan optimization. *Med. Phys.*, 36, 2009. accepted.
- [2] **J. Unkelbach**, Sun Yi, and J. Schmidhuber. An EM based training algorithm for recurrent neural networks. *Proc. Int. Conf. on Artificial Neural Networks (ICANN)*, 2009. accepted.
- [3] **J. Unkelbach**, B. Martin, M. Soukup, and T. Bortfeld. Reducing the sensitivity of IMPT treatment plans to setup errors and range uncertainties via probabilistic treatment planning. *Med. Phys.*, 36:149–163, 2009.
- [4] C. Orton, T. Bortfeld, A. Niemierko, and **J. Unkelbach**. The role of medical physicists and the AAPM in the development of treatment planning and optimization. *Med. Phys.*, 35:4911-4923, 2008.
- [5] **J. Unkelbach**, T. C. Y. Chan, and T. Bortfeld. Accounting for range uncertainties in the optimization of intensity modulated proton therapy. *Phys. Med. Biol.*, 52:2755–2773, 2007.
- [6] **J. Unkelbach** and U. Oelfke. Relating two techniques for handling uncertainties in IMRT optimization. *Phys. Med. Biol.*, 51:N423–N427, 2006.
- [7] D. Maleike, **J. Unkelbach**, and U. Oelfke. Simulation and visualization of dose uncertainties due to interfractional organ motion. *Phys. Med. Biol.*, 51(9):2237–2252, 2006.
- [8] **J. Unkelbach** and U. Oelfke. Incorporating organ movements in inverse planning: assessing dose uncertainties by Bayesian inference. *Phys. Med. Biol.*, 50:121–139, 2005.
- [9] **J. Unkelbach** and U. Oelfke. Incorporating organ movements in IMRT treatment planning for prostate cancer: Minimizing uncertainties in the inverse planning process. *Med. Phys.*, 32(8):2471–83, 2005.
- [10] S. Nill, **J. Unkelbach**, L. Dietrich, and U. Oelfke. Online correction for respiratory motion: evaluation of two imaging geometries. *Phys. Med. Biol.*, 50(17):4087–4096, 2007.
- [11] **J. Unkelbach** and U. Oelfke. Inclusion of organ movements in IMRT treatment planning via inverse planning based on probability distributions. *Phys. Med. Biol.*, 49:4005–29, 2004.
- [12] **J. Unkelbach**, A. Amann, W. Just, and E. Schöll. Time-delay autosynchronization of spatiotemporal dynamics in resonant tunneling diodes. *Physical Review E*, 68:026204, 2003.
- [13] E. Schöll, A. Amann, M. Rudolf, and **J. Unkelbach**. Transverse spatio-temporal instabilities in the double barrier resonant tunneling diode. *Physica B*, 314:113–117, 2002.

PhD thesis:

- [14] J. Unkelbach. *Inclusion of organ motion in IMRT optimization using probabilistic treatment planning*. PhD thesis, University of Heidelberg, 2006. Available at <http://www.ub.uni-heidelberg.de/archiv/6139/>.

Masters thesis:

- [15] J. Unkelbach. *Rückkopplungsgesteuerte transversale Dynamik der resonanten Tunneliode*. Diplomarbeit, Technische Universität Berlin, 2002. Available on request (in german).

Technical reports:

- [16] J. Unkelbach. Direct aperture optimization for proton therapy using a multi leaf collimator. Report number 2005-01, Massachusetts General Hospital, Boston, MA, USA, 2005. Available at <http://gray.mgh.harvard.edu/content/dmdocuments/Unkelbach.pdf>.

Conference Abstracts (presenting author):

- [17] J. Unkelbach, B. Martin, and T. Bortfeld. Why the safety margin concept is insufficient in particle therapy. *Proc. PTCOG*, Jacksonville, FL, USA, 2008.
- [18] J. Unkelbach, B. Martin, and T. Bortfeld. Design of a Next Generation Treatment Planning System That Incorporates Motion and Uncertainty in Inverse Planning. *Proc. 50th AAPM conference*, Houston, TX, USA, 2008.
- [19] J. Unkelbach. Including geometrical uncertainties in IMRT and IMPT optimization. *Radiother. Oncol.*, 84(Sup. 1):S90, 2007.
- [20] J. Unkelbach, T. C. Y. Chan, and T. Bortfeld. Handling range uncertainty in IMPT optimization. In Jean-Pierre Bissonnette, editor, *Proc. 15th Int. Conf. on the Use of Computers in Radiation Therapy, Volume 2*, pages 561–565, Toronto, Canada, 2007. Novel Digital Publishing.
- [21] J. Unkelbach, T. C. Y. Chan, and T. Bortfeld. Reducing the sensitivity of IMPT treatment plans to setup errors and range variations. *Med. Phys.*, 34(6):2523, 2007.
- [22] J. Unkelbach, D. Craft, T. Halabi, T. Bortfeld, and U. Oelfke. A mixed-integer formulation for direct aperture optimization of IMRT. *Med. Phys.*, 33(6):2055, 2006.
- [23] J. Unkelbach and U. Oelfke. Probabilistic treatment planning to incorporate organ motion into IMRT optimization. In *E-Verhandlungen 2006, Abstracts der Frühjahrstagung in Heidelberg*, page ST 11.3. Deutsche Physikalische Gesellschaft (DPG), 2006.
- [24] J. Unkelbach and U. Oelfke. A concept for the estimation of dose uncertainties caused by respiratory motion in radiotherapy. *Radiother. Oncol.*, 76(Sup. 2):S93, 2005.
- [25] J. Unkelbach, D. Maleike, and U. Oelfke. On probabilistic treatment planning: A novel concept for including organ motion into IMRT optimization. *Med. Phys.*, 32(6):1976, 2005.
- [26] J. Unkelbach and U. Oelfke. Inverse planning incorporating organ movements via probability distributions of voxel locations. *Radiother. Oncol.*, 73(Sup. 1):S347, 2004.
- [27] J. Unkelbach and U. Oelfke. Organ movements in IMRT treatment planning: inverse planning based on probability distributions. In B. Y. Yi, S. D. Ahn, E. K. Choi, and S. W. Ha, editors, *Proc. 14th Int. Conf. on the Use of Computers in Radiation Therapy*, pages 104–107, Seoul, South Korea, 2004. Jeong Publishing.
- [28] J. Unkelbach, S. Nill, and U. Oelfke. Effiziente Berücksichtigung von Normalgeweben in der inversen Therapieplanung: Bixel-Auswahl und Random Voxel Sampling. In W. Semmler and L. Schad, editors, *Medizinische Physik*, pages 242–243, Heidelberg, Germany, 2003. DGMP.

- [29] J. Unkelbach and U. Oelfke. Inclusion of stochastic organ movements in IMRT treatment planning. *Radiother. Oncol.*, 68(Sup. 1):S101, 2003.
- [30] J. Unkelbach, A. Amann, P. Rodin, and E. Schöll. Chaotic spatio-temporal scenarios in a globally coupled reaction-diffusion system. In *E-Verhandlungen 2002, Abstracts der Sitzung DY 41, Nichtlineare Dynamik I*, page DY 41.5. Deutsche Physicalische Gesellschaft (DPG), 2002.