

3. Publications

A) Original research papers in peer-reviewed journals

72. S. Fabiano, N. Torelli, D. Papp, **J. Unkelbach**. A novel stochastic optimization method for handling misalignments of proton and photon doses in combined treatments, *Phys. Med. Biol.* 67(18), **2022**
71. R. Ludwig, J. Hoffmann, B. Pouymayou, G. Morand, M. Broglie Däppen, M. Guckenberger, V. Grégoire, P. Balermipas, **J. Unkelbach**. A dataset on patient-individual lymph node involvement in oropharyngeal squamous cell carcinoma. *Data in Brief*, 43:p108345, **2022**
70. F. Amstutz, S. Fabiano, L. Marc, D. Weber, A. Lomax, **J. Unkelbach**, Y. Zhang. Combined proton-photon therapy for non-small cell lung cancer, *Medical Physics*, **2022**, in print
69. D. Papp, **J. Unkelbach**. Optimal allocation of limited proton therapy resources using model-based patient selection, *Medical Physics*, **2022**, in print
68. I. Telarovic, C. Yong, M. Guckenberger, **J. Unkelbach**, M. Pruschy. Radiation-induced lymphopenia does not impact treatment efficacy in a mouse tumor model, *Neoplasia*, 31:p100812, **2022**
67. P. Hejduk, M. Marcon, **J. Unkelbach**, A. Ciritsis, C. Rossi, K. Borkowski, A. Boss. Fully automatic classification of automated breast ultrasound (ABUS) imaging according to BI-RADS using a deep convolutional neural network, *European Radiology*, 32:p4868–4878, **2022**.
66. R. Ludwig, J. Hoffmann, B. Pouymayou, M. Broglie Däppen, G. Morand, M. Guckenberger, V. Grégoire, P. Balermipas; **J. Unkelbach**. Detailed patient-individual reporting of lymph node involvement in oropharyngeal squamous cell carcinoma with an online interface. *Radiotherapy & Oncology*, 169:p1-7, **2022**
2021
65. **J. Unkelbach**, S. Fabiano, ABA. Bennan, S. Müller, M. Bangert. Joint optimization of radiotherapy treatments involving multiple radiation modalities. *IEEE Transactions on Radiation and Plasma Medical Sciences*, 6(3):p294-303, **2022**
64. L. Marc, S. Fabiano, N. Wahl, C. Linsenmeier, A. Lomax, **J. Unkelbach**. Combined proton-photon treatment for breast cancer. *Phys. Med. Biol.*, 66(23):235002, **2021**
63. D. Vuong, M. Bogowicz, L. Wee, O. Riesterer, E. Vlaskou Badra, L. Abigail D’Cruz, P. Balermipas, J. van Timmeren, S. Burgermeister, A. Dekker, D. De Ruysscher, **J. Unkelbach**, S. Thierstein, E. I. Eboulet, S. Peters, M. Pless, M. Guckenberger, S. Tanadini-Lang. Quantification of the spatial distribution of primary tumors in the lung to develop new prognostic biomarkers for locally advanced NSCLC. *Scientific Reports*, 11(1):p1-10, **2021**
62. R. Ludwig, B. Pouymayou, P. Balermipas, **J. Unkelbach**. A hidden Markov model for lymphatic tumor progression in the head & neck. *Scientific Reports*, 11(1):p1-17, **2021**
61. F. Amstutz, L. Nenoff, F. Albertini, CO. Ribeiro, AC. Knopf, **J. Unkelbach**, DC. Weber, AJ. Lomax, Y. Zhang. An approach for estimating dosimetric uncertainties in deformable dose accumulation in pencil beam scanning proton therapy for lung cancer, *Phys. Med. Biol.* 66:105007, **2021**
60. ABA. Bennan, **J. Unkelbach**, N. Wahl, P. Salmone, M. Bangert. Joint Optimization of Photon-Carbon ion treatments for Glioblastoma. *Int. J. Rad. Onc. Biol. Phys.*, 111(2):p559-572, **2021**

59. N. Loizeau, S. Fabiano, D. Papp, K. Stützer, A. Jakobi, A. Bandurska-Luque, E. Troost, C. Richter, **J. Unkelbach**. Optimal allocation of proton therapy slots in combined proton-photon radiotherapy. *Int. J. Rad. Onc. Biol. Phys.*, 111(1):p196-207, **2021**
58. S. Petit, S. Breedveld, **J. Unkelbach**, D. den Hertog, M. Balvert. Robust dose-painting-by-numbers vs. non-selective dose escalation for non-small cell lung cancer patients. *Med. Phys.* 48(6):p3096-3108, **2021**
57. M. Mayinger, R. Ludwig, SM. Christ, R. Dal Bello, A. Ryu, N. Weitkamp, M. Pavic, H. Garcia Schüler, L. Wilke, M. Guckenberger, **J. Unkelbach**, S. Tanadini-Lang, N. Andratschke. Benefit of replanning in MR-guided online adaptive radiation therapy in the treatment of liver metastasis. *Radiation Oncology*, 16(1):p1-8, **2021**
56. D. Vuong, S. Tanadini-Lang, Z. Wu, R. Marks, **J. Unkelbach**, S. Hillinger, E. Innocents Eboulet, S. Thierstein, S. Peters, M. Pless, M. Guckenberger, M. Bogowicz. Radiomics feature activation maps as a new tool for signature interpretability. *Frontiers in oncology*. 10:578895, **2020**
55. D. Vuong, M. Bogowicz, S. Denzler, C. Oliveira, R. Foerster, F. Amstutz, HS. Gabryś, **J. Unkelbach**, S. Hillinger, S. Thierstein, A. Xyrafas, S. Peters, M. Pless, M. Guckenberger, S. Tanadini-Lang. Comparison of robust to standardized CT radiomics models to predict overall survival for non-small cell lung cancer patients. *Med. Phys.* 47(9):p4045-4053, **2020**
54. CR. Hansen, W. Crijns, M. Hussein, L. Rossi, P. Gallego, W. Verbakel, **J. Unkelbach**, D. Thwaites, B. Heijmen. Radiotherapy Treatment plannING study Guidelines (RATING): A framework for setting up and reporting on scientific treatment planning studies. *Radiotherapy and Oncology*, 153:p67-78, **2020**
53. I. Telarovic, J. Krayenbuehl, I. Grgic, F. Tschanz, M. Guckenberger, M. Pruschy, **J. Unkelbach**. Probing spatiotemporal fractionation on the preclinical level. *Phys. Med. Biol.* 65(22):22NT02, **2020**
52. Fabiano S, Bangert M, Guckenberger M, **Unkelbach J**. Accounting for range uncertainties in the optimization of combined proton-photon treatments via stochastic optimization. *Int. J. Rad. Onc. Biol. Phys.* 108(3), 792-801, **2020**
51. Fabiano S, Balermipas P, Guckenberger M, **Unkelbach J**. Combined proton–photon treatments - A new approach to proton therapy without a gantry, *Radiotherapy and Oncology* 145, 81-87, **2020**
50. M Bogowicz, A Jochems, TM Deist, S Tanadini-Lang, SH Huang, B Chan, JN Waldron, S Bratman, B O’Sullivan, O Riesterer, G Studer, **J Unkelbach**, S Barakat, RH Brakenhoff, I Nauta, SE Gazzani, G Calareso, K Scheckenbach, F Hoebbers, FWR Wesseling, S Keek, S Sanduleanu, RTH Leijenaar, MR Vergeer, CR Leemans, CHJ Terhaar, MWM van den Brekel, O Hamming-Vrieze, MA van der Heijden, HM Elhalawani, CD Fuller, M Guckenberger, P Lambin. Privacy-preserving distributed learning of radiomics to predict overall survival and HPV status in head and neck cancer, *Scientific reports* 10(1), 1-10, **2020**
49. Pouymayou B, Koechli C, Balermipas P, Guckenberger M, **Unkelbach J**. Analysis of lymphatic metastasis and progression patterns for clinical target volume (CTV) definition in head and neck squamous cell carcinoma (HNSCC) *Acta Oncologica* 58(10), 1519-1522, **2019**
48. R Poel, A Stuessi Lobmaier, N Andratschke, **J Unkelbach**, et al. Dosimetric comparison of protons vs photons in re-irradiation of intracranial meningioma, *The British journal of radiology* 92 (1100), 20190113, **2019**
47. Pouymayou B, Balermipas P, Riesterer O, Guckenberger M, **Unkelbach J**. A Bayesian network model of lymphatic tumor progression for personalized elective CTV definition in head and neck cancer. *Phys Med Biol.* 2019;64(16):165003
46. Gaddy MR, **Unkelbach J**, Papp D. Robust spatiotemporal fractionation schemes in the presence of patient setup uncertainty. *Medical physics* 46 (7), 2988-3000, **2019**

45. Ehrbar S, Jöhl A, Kühni M, Meboldt M, Ozkan Elsen E, Tanner C, Goksel O, Klöck S, **Unkelbach J**, Guckenberger M, Tanadini-Lang S. Dynamically deformable liver phantom for real-time motion-adaptive radiotherapy treatments. *Med Phys.* **2019** Feb;46(2):839-850.
44. Vuong D, Tanadini-Lang S, Huellner MW, Veit-Haibach P, **Unkelbach J**, Andratschke N, Kraft J, Guckenberger M, Bogowicz M. Interchangeability of radiomic features between [18F]-FDG PET/CT and [18F]-FDG PET/MR. *Med Phys.* **2019** Apr;46(4):1677-1685
43. M. Langhans, **J. Unkelbach**, T. Bortfeld, D. Craft. Optimizing highly noncoplanar VMAT trajectories: the NoVo method. *Phys Med Biol.* **2018**; 63(2):025023
42. **Unkelbach J**, Bangert M, De Amorim Bernstein K, Andratschke N, Guckenberger M. Optimization of combined proton-photon treatments. *Radiother. Oncol.* 128(1):133-138, **2018**
41. Gaddy MR, Yıldız S, **Unkelbach J**, Papp D. Optimization of spatiotemporally fractionated radiotherapy treatments with bounds on the achievable benefit. *Phys. Med. Biol.* **2018**;63(1):015036
40. Perkó Z, Bortfeld TR, Hong TS, Wolfgang J, **Unkelbach J**. Derivation of mean dose tolerances for new fractionation schemes and treatment modalities. *Phys Med Biol.* **2018**;63(3):035038
39. Bogowicz M, Leijenaar RTH, Tanadini-Lang S, Riesterer O, Pruschy M, Studer G, **Unkelbach J**, Guckenberger M, Konukoglu E, Lambin P. Post-radiochemotherapy PET radiomics in head and neck cancer - The influence of radiomics implementation on the reproducibility of local control tumor models. *Radiother Oncol.* 2017 Dec;125(3):385-391.
38. **Unkelbach J**, Papp D, Gaddy MR, Andratschke N, Hong T, Guckenberger M. Spatiotemporal fractionation schemes for liver stereotactic body radiotherapy. *Radiother Oncol.* 125(2):357-364, **2017**
37. M. Bogowicz, O. Riesterer, L.S. Stark, G. Studer, **J. Unkelbach**, M. Guckenberger, S. Tanadini-Lang. Comparison of PET and CT radiomics for prediction of local tumor control in head and neck squamous cell carcinoma. *Acta Oncol.* 56(11):1531-1536, **2017**
36. M. Le, H. Delingette, J. Kalpathy-Cramer, E. Gerstner, T. Batchelor, **J. Unkelbach**, N. Ayache. Personalized Radiotherapy Planning Based on a Computational Tumor Growth Model. *IEEE Trans Med Imaging*, **2017**;36(3):815-825.
35. M. Bangert, **J. Unkelbach**. Accelerated iterative beam angle selection in IMRT. *Med. Phys.*, **2016**; 43(3):1073-1082
34. **J. Unkelbach**, M. Bussière, P. Chapman, J. Loeffler, H. Shih. Spatiotemporal Fractionation Schemes for Irradiating Large Cerebral Arteriovenous Malformations. *Int. J. Rad. Onc. Biol. Phys.*, **2016**;95(3):1067-1074
33. M. Le, **J. Unkelbach**, N. Ayache, H. Delingette. Sampling image segmentations for uncertainty quantification. *Medical Image Analysis*, **2016**;34:42-51
32. M. Le, H. Delingette, J. Kalpathy-Cramer, E. Gerstner, T. Bachelor, **J. Unkelbach**, N. Ayache. MRI based bayesian personalization of a tumor growth model. *IEEE Trans. Med. Imaging*, **2016**;35(10):2329-2339
31. K. Jafari-Khouzani, F. Loebel, W. Bogner, O. Rapalino, G. Gonzalez, E. Gerstner, A. Chi, T. Batchelor, B. Rosen, **J. Unkelbach**, H. Shih, D. Cahill, O. Andronesi. Volumetric relationship between 2-Hydroxyglutarate and FLAIR hyperintensity has potential implications for radiotherapy planning of mutant IDH glioma patients. *Neuro-Oncology*, **2016**; 18(11):1569-1578
30. **J. Unkelbach**, P. Botas, D. Giantsoudi, B. Gorissen, H. Paganetti. Reoptimization of intensity-modulated proton therapy plans based on linear energy transfer. *Int. J. Rad. Onc. Biol. Phys.*, **2016**;96(5):1097-1106
29. U. Titt, M. Sell, **J. Unkelbach**, M. Bangert, D. Mirkovic, U. Oelfke, R. Mohan. Degradation of Proton

- Depth Dose Distributions Attributable to Microstructures in Lung-equivalent Material. *Med. Phys.*, **2015**; 42(11):6425-6432
28. E. Salari, **J. Unkelbach**, T. Bortfeld. A Mathematical Programming Approach to the Fractionation Problem in Chemoradiotherapy. *IIE Trans. on Healthcare Sys. Eng.*, **2015**; 5:55-73
27. **J. Unkelbach**, D. Papp. The emergence of nonuniform spatiotemporal fractionation schemes within the standard BED model. *Med. Phys.*, **2015**;42:2234-2241
26. D. Papp, T. Bortfeld, **J. Unkelbach**. A modular approach to intensity-modulated arc therapy optimization with noncoplanar trajectories. *Phys. Med. Biol.*, **2015**; 60(13):5179-5198
25. T. Bortfeld, J. Ramakrishnan, J. Tsitsiklis, and **J. Unkelbach**. Optimization of radiation therapy fractionation schedules in the presence of tumor repopulation. *INFORMS Journal on Computing*, **2015**; 27(4):788-803
24. **J. Unkelbach**, B. H. Menze, E. Konukoglu, F. Dittmann, M. Le, N. Ayache, and H. Shih. Radiotherapy planning for glioblastoma based on a tumor growth model: improving target volume delineation. *Phys. Med. Biol.*, **2014**; 59(3):747-770
23. **J. Unkelbach**, B. H. Menze, E. Konukoglu, F. Dittmann, N. Ayache, and H. Shih. Radiotherapy planning for glioblastoma based on a tumor growth model: implications for spatial dose redistribution. *Phys. Med. Biol.*, **2014**; 59(3):771-790
22. D. Craft, D. Papp, and **J. Unkelbach**. Plan averaging for multicriteria navigation of sliding window IMRT and VMAT. *Medical Physics*, **2014**; 41:021709
21. D. Papp and **J. Unkelbach**. Direct leaf trajectory optimization for volumetric modulated arc therapy with sliding window delivery. *Medical Physics*, **2014**; 41:011701
20. **J. Unkelbach**, D. Craft, T. Hong, D. Papp, J. Ramakrishnan, E. Salari, J. Wolfgang, and T. Bortfeld. Exploiting tumor shrinkage through temporal optimization of radiotherapy. *Phys. Med. Biol.*, **2014**; 59(12):3059-3079
19. D. Craft, M. Bangert, T. Long, D. Papp, **J. Unkelbach**. Shared data for intensity modulated radiation therapy (IMRT) optimization research: the CORT dataset. *GigaScience*, **2014**; 3:37
18. **J. Unkelbach**, C. Zeng, and M. Engelsman. Simultaneous optimization of dose distributions and fractionation schemes in particle radiotherapy. *Med. Phys.* **2013**; 40(9):091702
17. **Unkelbach J**, Craft D, Salari E, Ramakrishnan J, and Bortfeld T. The dependence of optimal fractionation schemes on the spatial dose distribution. *Phys. Med. Biol.* **2013**; 58(1):159-167
16. Cassioli A and **Unkelbach J**. Aperture shape optimization for IMRT treatment planning. *Phys. Med. Biol.* **2013**; 58(2):301-18
15. Salari E and **Unkelbach J**. A column-generation based technique for multi-criteria direct aperture optimization. *Phys. Med. Biol.* **2013**; 58:621-39
14. A. Trofimov, **J. Unkelbach**, T. DeLaney, and T. Bortfeld. Visualization of a variety of possible dosimetric outcomes in radiation therapy using dose-volume histogram bands. *Practical radiation oncology.* **2012**; 2(3):164-171
13. W. Chen, **J. Unkelbach**, A. Trofimov, T. Madden, H. Kooy, T. Bortfeld, and D. Craft. Including robustness in multi-criteria optimization for intensity-modulated radiotherapy. *Phys. Med. Biol.* **2012**; 57(3):591-608
12. **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. *Medical Physics*. 2009;36:149--163
11. E. Heath, **J. Unkelbach**, U. Oelfke. Incorporating uncertainties in respiratory motion into 4D treatment plan optimization. *Medical Physics*. 2009;36:3059—3071
10. **J. Unkelbach** , T. C. Y. Chan, T. Bortfeld. Accounting for range uncertainties in the optimization of intensity modulated proton therapy. *Phys. Med. Biol.* 2007;52:2755--2773
9. D. Maleike, **J. Unkelbach**, U. Oelfke. Simulation and visualization of dose uncertainties due to interfractional organ motion. *Phys. Med. Biol.* 2006;51:2237--2252
8. **J. Unkelbach** and U. Oelfke. Relating two techniques for handling uncertainties in IMRT optimization. *Phys. Med. Biol.* 2006;51:N423--N427
7. C. Thilman, P. Häring, L. Thilman, **J. Unkelbach**, B. Rhein, S. Nill, P. Huber, E. Janisch, C. Thieke, and J. Debus. The influence of breathing motion on intensity modulated radiotherapy in the step-and-shoot technique: phantom measurements for irradiation of superficial target volumes. *Phys. Med. Biol.* 2006;51:N117--N126
6. S. Nill, **J. Unkelbach**, L. Dietrich, U. Oelfke. Online correction for respiratory motion: evaluation of two imaging geometries. *Phys. Med. Biol.* 2005;50:4087--4096
5. **J. Unkelbach** and U. Oelfke. Incorporating organ movements in IMRT treatment planning for prostate cancer: Minimizing uncertainties in the inverse planning process. *Med. Phys.* 2005;32:2471--83
4. **J. Unkelbach** and U. Oelfke. Incorporating organ movements in inverse planning: assessing dose uncertainties by Bayesian inference. *Phys. Med. Biol.* 2005;50:121--139
3. **J. Unkelbach** and U. Oelfke. Inclusion of organ movements in IMRT treatment planning via inverse planning based on probability distributions. *Phys. Med. Biol.* 2004;49:4005--29
2. **J. Unkelbach**, A. Amann, W. Just, E. Schöll. Time-delay autosynchronization of spatiotemporal dynamics in resonant tunneling diodes. *Physical Review E*, 2003;68(2):026204
1. E. Schöll, A. Amann, M. Rudolf, **J. Unkelbach**. Transverse spatio-temporal instabilities in the double barrier resonant tunneling diode. *Physica B*, 2002;314:113--117

B) Peer-reviewed review articles

7. **J. Unkelbach**, T. Bortfeld, CE. Cardenas, V. Gregoire, W. Hager, B. Heijmen, R. Jeraj, S. Korreman, R. Ludwig, B. Pouymayou, N. Shusharina, J. Söderberg, I. Toma-Dasu, EGC. Troost, E. Vasquez Osorio. The role of computational methods for automating and improving clinical target volume definition. *Radiotherapy and Oncology*, 153:15-25, **2020**
6. H. Paganetti CJ. Beltran, S. Both; L. Dong, JB. Flanz, KM. Furutani, C. Grassberger, DR. Grosshans, A. Knopf, J. Langendijk, H. Nyström, K. Parodi, B. Raaymakers, C. Richter, GO. Sawakuchi, JM. Schippers, SF. Shaitelman, K. Teo, **J. Unkelbach**, P. Wohlfahrt, A. Lomax. Roadmap: proton therapy physics and biology. *Phys. Med. Biol.* 66(5):05RM01, **2020**
5. **J. Unkelbach**, Alber M, Bangert M, Bokrantz R, Chan TCY, Deasy JO, Fredriksson A, Gorissen BL, van Herk M, Liu W, Mahmoudzadeh H, Nohadani O, Siebers JV, Witte M, Xu H. Robust Radiotherapy Planning. *Phys. Med. Biol.*, 63(22):22TR02, **2018**

4. **J. Unkelbach**, H. Paganetti. Robust Proton Treatment Planning: Physical and Biological Optimization. *Seminars in Radiation Oncology*, 28(2):88-96, **2018**
3. **J. Unkelbach**, T. Bortfeld, D. Craft, M. Alber, M. Bangert, R. Bokrantz, D. Chen, R. Li, L. Xing, C. Men, S. Nill, D. Papp, E. Romeijn, E. Salari. Optimization approaches to volumetric modulated arc therapy planning. *Medical Physics*, 42(3):1367-77, **2015**
2. Y. Censor and **J. Unkelbach**. From analytic inversion to contemporary IMRT optimization: radiation therapy revisited from a mathematical perspective. *Physica Medica*. 28(2):109–118, **2012**
1. C. Orton, T. Bortfeld, A. Niemierko, **J. Unkelbach**. The role of medical physicists and the AAPM in the development of treatment planning and optimization; *Medical Physics*. 35(11):4911-23, 2008

C) Other publications

Peer-reviewed conference papers (4-10 pages in length):

11. **J. Unkelbach**. Non-uniform spatiotemporal fractionation schemes in photon radiotherapy. *IFMBE Proc. World Cong. on Med. Phys. Biomed. Eng.*, Volume 51:401-404, Springer, **2015**
10. M. Bangert and **J. Unkelbach**. Objective function surrogates for iterative beam angle selection. *IFMBE Proc. World Cong. on Med. Phys. Biomed. Eng.*, Volume 51:413-417, Springer, **2015**
9. M. Lê, H. Delingette, J. Kalpathy-Cramer, E. Gerstner, T. Batchelor, **J. Unkelbach**, N. Ayache. Bayesian Personalization of Brain Tumor Growth Model. *MICCAI, Lecture Notes in Computer Science*, vol 9350, Springer, **2015**.
8. M. Lê, **J. Unkelbach**, N. Ayache, H. Delingette. GPSSI: Gaussian Process for Sampling Segmentations of Images, *MICCAI, Lecture Notes in Computer Science*, vol 9351, Springer, **2015**. (**Young scientist award**)
7. M. Le, H. Delingette, J. Kalpathy-Cramer, E. Gerstner, H. A. Shih, T. Batchelor, **J. Unkelbach**, and N. Ayache. Multimodal Analysis of Vasogenic Edema in Glioblastoma Patients for Radiotherapy Planning. *The MIDAS Journal (Proc. MICCAI workshop IGART)*, **2014** (available at <http://hdl.handle.net/10380/3500>)
6. F. Dittmann, B. Menze, E. Konukoglu, **J. Unkelbach**. Use of Diffusion Tensor Images in Glioma Growth Modeling for Radiotherapy Target Delineation. In L. Shen et al (editors), *Multimodal Brain Image Analysis (Proc. MICCAI workshop MBIA)*, *Lecture Notes in Comp. Sci.* 8159, p63-73, **2013**
5. **J. Unkelbach**, B. Menze, A. Motamedi, F. Dittmann, E. Konukoglu, N. Ayache, and H. Shih. Glioma growth modeling for radiotherapy target delineation. *MICCAI workshop on Multimodal imaging in radiotherapy*. **2012** (available at <http://hal.archives-ouvertes.fr/hal-00755222>)
4. **J. Unkelbach**, Sun Yi, J. Schmidhuber. An EM based training algorithm for recurrent neural networks. In Alippi et al (editors) *ICANN 2009, Part I, Lecture Notes in Comp. Sci.* 5768, p964-974, 2009
3. **J. Unkelbach**, M. Soukup, M. Alber, and T. Bortfeld. Range, setup and dose calculation errors in IMPT and their interrelation. In Dössel et al (editors), *World Congress on Medical Physics and Biomedical Engineering, IFMBE Vol 25/1*, 2009; p900--903
2. **J. Unkelbach**, T. C. Y. Chan, and T. Bortfeld. Handling range uncertainty in IMPT optimization. In J. Bissonnette et al (editors), *Proc. 15th Int. Conf. on the Use of Computers in Radiation Therapy, Volume 2*, 2007, p561-565
1. **J. Unkelbach** and U. Oelfke. Organ movements in IMRT treatment planning: inverse planning based on probability distributions. In *Proc. 14th Int. Conf. on the Use of Computers in Radiation Therapy, Seoul, South Korea*, 2004, p104-107. (**Young investigator's award**)

Book chapters:

7. **J. Unkelbach**. Intensity-modulated radiation therapy: Photons. in F. Khan et al (editors), Treatment Planning in Radiation Oncology, Wolters Kluwer, 4th edition (Chapter 10), **2016**, updated for 5th edition (Chapter 25), **2021**
6. R. Kierkels, A. Fredriksson, **J. Unkelbach**. Radiation Treatment Uncertainties: Robust Evaluation and Optimization (Chapter 6), in J. van Dyk (editor), Modern technology of radiation oncology: A Compendium for Medical Physicists and Radiation Oncologists (Volume 4), Medical Physics Publishing, **2020**
5. A. Trofimov, **J. Unkelbach**, and D. Craft. Treatment planning optimization, in H. Paganetti (editor), Proton therapy physics, CRC Press, 1st edition (Chapter 15), **2012**, updated for 2nd edition (Chapter 19), **2019**
4. D. Schanne, **J. Unkelbach**, M. Guckenberger. Thorax: lungs and esophagus. in T. Rancati and C. Fiorino (editors), Modelling radiotherapy side effects: practical applications for planning optimization (Part II g), **2018**
3. **J. Unkelbach**, D. Craft, B. Gorissen, T. Bortfeld. Plan Optimization. in I. Das and H. Paganetti (editors), Principles and Practice of Proton Beam Therapy (Chapter 22), Medical Physics Publishing, **2015**
2. A. Boyer and **J. Unkelbach**. Intensity-modulated radiation therapy planning. in A. Brahme (editor), Comprehensive Biomedical Physics (Volume 9) - Radiation Therapy Physics and Treatment Planning (Chapter 14), Elsevier, **2014**
1. D. McQuaid, **J. Unkelbach**, A. Trofimov, and T. Bortfeld. Robust optimization, in J. R. Palta et al (editor), Uncertainties in External Beam Radiation Therapy (Chapter 11), Medical Physics Publishing, **2011**

Peer-reviewed editorials:

1. B. Gorissen, **J. Unkelbach**, T. Bortfeld. Mathematical optimization of treatment schedules. Int. J. Rad. Onc. Biol. Phys., **2016**;96(1):6-8

Patents:

1. D. Papp, **J. Unkelbach**, T. Bortfeld, MF. Bal. Volumetric modulated arc therapy (VMAT) with non-coplanar trajectories. US Patent 10,549,115, 2020