
Curriculum Vitae

Nikolai J. Mickevicius, Ph.D.

Research Assistant Professor of Biophysics
Medical College of Wisconsin

Education

- 2013 B.S. Biomedical Engineering, Milwaukee School of Engineering, Milwaukee, WI
- 2018 Ph.D. Biophysics, Medical College of Wisconsin, Milwaukee, WI

Postgraduate Training and Fellowship Appointments

- 2021-2022 Bentson Translational Research Fellow, Department of Human Oncology, University of Wisconsin-Madison, Madison, WI

Academic Appointments

- 2018-2021 Research Scientist, Department of Radiation Oncology, Medical College of Wisconsin, Milwaukee, WI
- 2022-Present Assistant Professor, Department of Radiology, Medical College of Wisconsin, Milwaukee, WI

Awards and Honors

- 2013 Poster Award, Graduate Student Research Day, Medical College of Wisconsin
- 2016 Young Investigator Award, International Symposium on MR in Radiation Therapy
- 2019 Best of Physics, Annual ASTRO Meeting
- 2021 1st Place Poster, ISMRM Workshop on Data Sampling and Image Reconstruction
- 2022 AAPM Cancer Breakthrough Distinction at Annual ASTRO Meeting

Professional Memberships

- 2012-Present Member, Eta Kappa Nu Electrical Engineering Honor Society
- 2012-Present Member, Alpha Eta Mu Beta Biomedical Engineering Honor Society
- 2014-2021 Trainee Member, International Society of Magnetic Resonance in Medicine
- 2021-Present Full Member, International Society of Magnetic Resonance in Medicine

Journal Review

- 2019-Present, Physics in Medicine & Biology
- 2019-Present, Radiotherapy and Oncology
- 2020-Present, Medical Physics
- 2021-Present, Advances in Radiation Oncology
- 2022-Present, Magnetic Resonance in Medicine

Invited Presentations

- 2021 UW-Madison Medical Physics Seminar, "Magnetic resonance fingerprinting for low-field MR-guided radiation therapy," Madison, WI
- 2021 UW-Madison MRI Group Meeting, "MRI developments for motion management in radiation therapy," Madison, WI
- 2021 AAPM Session of MR-guided Radiotherapy, "Toward magnetic resonance fingerprinting for low-field MR-guided radiation therapy," Virtual
- 2022 MCW Center for Imaging Research Seminar Series, "Quantitative MRI: Current State-of-the-Art and Next-Generation Solutions," Milwaukee, WI

Conference Presentations of Peer Reviewed Work

- Mickevicius NJ, Cochran EJ, Rand SD, Connelly J, Al-Gizawiy M, Schmainda KM, LaViolette PS. Brain tumor hypercellularity detected in diffusion restricted voxels outside contrast enhancement in six human brains examined ex-vivo. Annual Meeting of the International Society for Magnetic Resonance in Medicine, Milan, Italy, 2014.
- Mickevicius NJ, Paulson ES. HENSIR: Hadamard encoded simultaneous image refocusing. Annual Meeting of the International Society for Magnetic Resonance in Medicine, Toronto, Canada, 2015.
- Mickevicius NJ, Lathuiliere F, Lachaine M, Paulson ES. Effect of multiband RF pulse duration on cine MRI tracking accuracy for MRI-gRT. Annual Meeting of the American Association of Physicists in Medicine, Anaheim, CA, 2015.
- Mickevicius NJ, Paulson ES. Toward clinically realizable 4D-MRI for MRI-guided radiation therapy, International Symposium on MR in Radiation Therapy, Ann Arbor, MI, 2016.
- Mickevicius NJ, Paulson ES. Multiplexed simultaneous orthogonal plane imaging (mSOPI) for intrafraction motion monitoring in MRI-guided radiation therapy, International Symposium on MR in Radiation Therapy, Ann Arbor, MI, 2016.
- Mickevicius NJ, Paulson ES. Simultaneous orthogonal plane imaging with balanced SSFP contrast using k-t GRAPPA, International Symposium on MR in Radiation Therapy, Sydney, Australia, 2017.
- Mickevicius NJ, Paulson ES. Blipped radial CAIPIRINHA for simultaneous multislice pseudo steady-state free-precession magnetic resonance fingerprinting. Annual Meeting of the Radiological Society of North America, Chicago, IL, 2017.
- Mickevicius NJ, Chen X, Boyd Z, Lee HJ, Ibbott G, Paulson ES. Simultaneous motion monitoring and truth-in-delivery analysis framework for MR-guided radiotherapy. Annual Meeting of the American Association of Physicists in Medicine, Nashville, TN, 2018.
- Mickevicius NJ, Paulson ES, Nencka AS. Application of a k-space interpolating artificial neural network to in-plane accelerated simultaneous multislice imaging for motion monitoring.

Annual Meeting of the International Society for Magnetic Resonance in Medicine, Montreal, Canada, 2019.

- Mickevicius NJ, Paulson ES. Magnetic resonance coherence pathway unraveling. Annual Meeting of the International Society for Magnetic Resonance in Medicine, Virtual, 2021.
- Mickevicius NJ, Morris ZM, Glide-Hurst CK. Toward magnetic resonance fingerprinting for low-field MR-guided radiation therapy. Annual Meeting of the American Association of Physicists in Medicine, Virtual, 2021.
- Mickevicius NJ, Glide-Hurst, CK. Low-rank inversion reconstruction for through-plane accelerated radial MR fingerprinting. Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2022.

Refereed Journal Publications

1. LaViolette PS, **Mickevicius NJ**, Cochran EJ, Rand SD, Connelly J, Bovi JA, Malkin MG, Mueller WM, Schmainda KM. Precise ex vivo histological validation of heightened cellularity and diffusion-restricted necrosis in regions of dark apparent diffusion coefficient in 7 cases of high-grade glioma. *Neuro-oncology* 16(12): 1599-1606, 2014.
2. **Mickevicius NJ**, Carle AB, Bluemel T, Santarriaga S, Schloemer F, Shumate D, Connelly J, Schmainda KM, LaViolette PS. Location of brain tumor intersecting white matter tracts predicts patient prognosis. *Journal of Neuro-Oncology* 125(2): 393-400, 2015.
3. Huettner AM, **Mickevicius NJ**, Ersoz A, Koch KM, Muftuler LT, Nencka AS. Wavelet domain radiofrequency pulse design applied to magnetic resonance imaging. *PloS One* 10(10): e0141151, 2015.
4. **Mickevicius NJ**, Paulson ES. Simultaneous orthogonal plane imaging. *Magnetic Resonance in Medicine* 78(5): 1700-1710, 2017.
5. **Mickevicius NJ**, Paulson ES. Investigation of undersampling and reconstruction algorithm dependence on respiratory correlated 4D-MRI for online MR-guided radiation therapy. *Physics in Medicine and Biology* 62(8): 2910, 2017.
6. Bourque AE, Bedwani S, Carrier JF, Ménard C, Borman P, Bos C, Raaymakers BW, **Mickevicius NJ**, Paulson ES, Tijssen RH. Particle filter-based target tracking algorithm for magnetic resonance-guided respiratory compensation: Robustness and accuracy assessment. *International Journal of Radiation Oncology * Biology * Physics* 100(2): 325-334, 2018.
7. **Mickevicius NJ**, Chen X, Boyd Z, Lee HJ, Ibbott GS, Paulson ES. Simultaneous motion monitoring and truth-in-delivery analysis imaging framework for MR-guided radiotherapy. *Physics in Medicine & Biology* 63: 235014, 2018.
8. **Mickevicius NJ**, Paulson ES. Simultaneous orthogonal plane cine imaging with balanced steady-state free-precession contrast using k-t GRAPPA. *Physics in Medicine & Biology* 63(15): 15NT02, 2018.
9. **Mickevicius NJ**, Paulson ES. Simultaneous acquisition of orthogonal plane cine imaging and isotropic 4D-MRI using super-resolution. *Radiotherapy and Oncology* 136: 121-129, 2019.
10. **Mickevicius NJ**, Nencka AS, Paulson ES. Generalized simultaneous multi-orientation 2D imaging. *Magnetic Resonance in Medicine* 84(2): 847-856, 2020.
11. Zhang Y, Paulson ES, Lim S, Hall WA, Ahunbay E, **Mickevicius NJ**, Straza MW, Erickson B, Li XA. A patient-specific auto-segmentation strategy using multi-input deformable image registration for MRI-guided online adaptive radiotherapy: A feasibility study. *Advances in Radiation Oncology* 5(6): 1350-1358, 2020.

12. Paulson ES, Ahunbay E, Chen X, **Mickevicius NJ**, Chen GP, Schultz C, Erickson B, Straza MW, Hall WA, Li XA. 4D-MRI driven MR-guided online adaptive radiotherapy for abdominal stereotactic body radiation therapy on a high field MR-Linac: Implementation and initial clinical experience. *Clinical and Translational Radiation Oncology* 23: 72-79, 2020.
13. Hall WA, Straza MW, Chen X, **Mickevicius NJ**, Erickson B, Schultz C, Awan M, Ahunbay E, Li XA, Paulson ES. Initial clinical experience of stereotactic body radiation therapy (SBRT) for liver metastases, primary liver malignancy, and pancreatic cancer with 4D-MRI based online adaptation and real-time MRI monitoring using a 1.5 Tesla MR-Linac. *PloS One* 15(8): e0236570, 2020.
14. Nencka AS, Arpinar VE, Bhawe S, Yang B, Banerjee S, McCrea M, **Mickevicius NJ**, Muftuler LT, Koch KM. Split slice training augmentation and hyperparameter tuning of RAKI networks for simultaneous multi-slice reconstruction. *Magnetic Resonance in Medicine* 85: 3272-3280, 2021.
15. **Mickevicius NJ**, Paulson ES, On the use of low-dimensional temporal subspace constraints to reduce reconstruction time and improve image quality of accelerated 4D-MRI. *Radiotherapy and Oncology* 158: 215-223, 2021.
16. **Mickevicius NJ**, Kim J, Zhao J, Morris ZM, Hurst Jr. N, Glide-Hurst CK. Toward magnetic resonance fingerprinting for low-field MR-guided radiation therapy. *Medical Physics*, 48: 6930-6940, 2021.
17. **Mickevicius NJ**, Glide-Hurst, CK. Low-rank inversion reconstruction for through-plane accelerated radial MR fingerprinting applied to relaxometry at 0.35 T. *Magnetic Resonance in Medicine* 88(2): 840-848, 2022.
18. **Mickevicius NJ**, Sharafi A, Nittka M, Chebrolov VV, Nencka AS, Koch KM. Efficient multi-spectral MRI near metal implants with slab-selective spectral calibration and cross-contrast parallel imaging weight sharing. *Magnetic Resonance in Medicine* (submitted).
19. **Mickevicius NJ**, Koch KM, Nencka AS. Numerical optimization of adiabatic inversion pulses with explicit peak B_1 and specific absorption rate constraints. *Magnetic Resonance in Medicine* (in preparation).
20. **Mickevicius NJ**, Nencka AS, Koch KM. Model-based multi-spectral image combination for artifact-reduced MRI near metal. *Magnetic Resonance in Medicine* (in preparation).

Abstracts

1. **Mickevicius NJ**, Cochran EJ, Rand SD, Connelly J, Al-Gizawiy M, Schmainda KM, LaViolette PS. Brain tumor hypercellularity detected in diffusion restricted voxels outside contrast enhancement in six human brains examined ex vivo. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2014.
2. **Mickevicius NJ**, Carle A, Santarriaga S, LaViolette PS. Location of brain tumor intersecting white matter tracts predicts survival prior to therapy. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2014.
3. **Mickevicius NJ**, Lathuiliere F, Lachaine M, Paulson ES. Effect of multiband RF pulse duration on cine MRI tracking accuracy for MRI-gRT. *Proceedings of the Annual Meeting of the American Association of Physicists in Medicine*, 2015.
4. **Mickevicius NJ**, Lathuiliere F, Lachaine M, Paulson ES. Advantages of radial CAIPI for real-time motion management in MRI-gRT. *Proceedings of the International Symposium on MR in RT*, 2015.

5. LaViolette PS, Cochran EJ, **Mickevicius NJ**, Connelly J, Schmainda KM, Rand SD. Brain tumor imaging based histology trained maps (IBHTMs) of cellularity predict tumor presence in pathologically confirmed regions sampled ex vivo. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2015.
6. **Mickevicius, NJ**, Paulson ES. HENSIR: Hadamard encoded simultaneous image refocusing. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2015.
7. Salmon AE, Pellatt BJ, **Mickevicius, NJ**, Cochran EJ, LaViolette PS. In vivo MRI-based 3D printed molds and individualized sectioning apparatuses improve MRI-histopathologic co-registration in brain cancer patients. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2015.
8. Huettner AM, **Mickevicius, NJ**, Ersoz A, Koch KM, Muftuler LT, Nencka AS. A wavelet-based optimization for RF pulse design applied to multiband imaging at 7T. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2015.
9. **Mickevicius NJ**, Paulson ES. Toward clinically realizable 4D-MRI for MRI-guided radiation therapy. *Proceedings of the International Symposium on MR in RT*, 2016.
10. **Mickevicius NJ**, Paulson ES. Multiplexed simultaneous orthogonal plane imaging (mSOPI) for intrafraction motion monitoring in MRI-guided radiation therapy. *Proceedings of the International Symposium on MR in RT*, 2016.
11. **Mickevicius, NJ**, Paulson ES. Improvements in simultaneous orthogonal plane imaging through the use of SPIRiT and virtual conjugate coils. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2017.
12. **Mickevicius, NJ**, Paulson ES. Blipped radial CAIPIRINHA for simultaneous multislice pseudo steady-state free-precession magnetic resonance fingerprinting. *Proceedings of Annual Meeting of the Radiological Society of North America*, 2017.
13. **Mickevicius NJ**, Paulson ES. Simultaneous orthogonal plane imaging with balanced SSFP contrast using k-t GRAPPA. *Proceedings of the International Symposium on MR in RT*, 2017.
14. **Mickevicius NJ**, Chen X, Boyd Z, Lee HJ, Ibbott GS, Paulson ES. Simultaneous motion monitoring and truth-in-delivery analysis framework for MR-guided radiotherapy. *Proceedings of the Annual Meeting of the American Association of Physicists in Medicine*, 2018.
15. Muftuler LT, **Mickevicius NJ**, Nencka AS, Paulson ES. Rapid abdominal imaging using highly accelerated projection imaging (HAPI). *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2019.
16. **Mickevicius NJ**, Paulson ES. Simultaneous acquisition of orthogonal plane cine imaging and isotropic 4D-MRI using super-resolution. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2019.
17. **Mickevicius NJ**, Muftuler LT, Nencka AS, Paulson ES. Highly accelerated simultaneous multislice projection imaging. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2019.
18. **Mickevicius NJ**, Paulson ES, Nencka AS. Application of a k-space interpolating artificial neural network to in-plane accelerated simultaneous multislice imaging for motion monitoring. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2019.
19. **Mickevicius NJ**, Nencka AS, Paulson ES. Pseudo-cartesian k-space interpolation using artificial neural networks. *Proceedings of the Annual Meeting of the International Society of*

Magnetic Resonance in Medicine, 2019.

20. **Mickevicius NJ**, Straza MW, Hall WA, Paulson ES. First clinical use of 4D-MRI for online adaptive MR-gRT on a high field MR-Linac. *Proceedings of the Annual Meeting of the American Society of Radiation Oncology*, 2019.
21. Keiper T, Tai A, **Mickevicius NJ**, Lim S, Paulson ES, Klawikowski S, Zhong H, Li XA. Impact of intrafractional changes of abdominal gas cavities in MR-guided adaptive radiation therapy: Is real-time adaptation necessary? *Proceedings of the Annual Meeting of the American Society of Radiation Oncology*, 2019.
22. Paulson ES, Ahunbay E, Chen X, **Mickevicius NJ**, Erickson B, Schultz C, Straza MW, Li XA, Hall WA. Initial clinical experience using 4D-MRI based MR-guided online adaptive SBRT on a high field MR-Linac. *Proceedings of the Annual Meeting of the American Society of Radiation Oncology*, 2019.
23. Hall WA, Straza MW, Chen X, **Mickevicius NJ**, Erickson B, Schultz C, Awan M, Ahunbay E, Li XA, Paulson ES. Initial clinical experience of stereotactic body radiation therapy (SBRT) for liver metastases, primary liver malignancy, and pancreatic abdominal nodal recurrence with 4D-MRI based online adaptation and real-time motion monitoring using a 1.5 Tesla MR-Linac. *Proceedings of the Annual Meeting of the American Society of Radiation Oncology*, 2019.
24. **Mickevicius NJ**, Paulson ES. Self-supervised model-based deep learning reconstruction for undersampled free-breathing stack-of-stars acquisitions. *Proceedings of the International Society of Magnetic Resonance in Medicine Workshop on Data Sampling and Image Reconstruction*, 2020.
25. **Mickevicius NJ**, Paulson ES. Target-driven and super-resolved parallel imaging reconstruction directly from undersampled k-space measurements. *Proceedings of the International Society of Magnetic Resonance in Medicine Workshop on Data Sampling and Image Reconstruction*, 2020.
26. **Mickevicius NJ**, Paulson ES. Magnetic resonance coherence pathway unraveling. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2021.
27. **Mickevicius NJ**, Morris ZM, Glide-Hurst CK. Toward magnetic resonance fingerprinting for low-field MR-guided radiation therapy. *Proceedings of the Annual Meeting of the American Association of Physicists in Medicine*, 2021.
28. **Mickevicius NJ**, Glide-Hurst, CK. Low-rank inversion reconstruction for through-plane accelerated radial MR fingerprinting. *Proceedings of the Annual Meeting of the International Society of Magnetic Resonance in Medicine*, 2022.