Stephan Naunheim - Publication List

The following document lists the publication with regard to the categories journal articles, pre-prints, talks and posters.

Journal Articles

[1] F. Mueller, S. Naunheim, Y. Kuhl, D. Schug, T. Solf, and V. Schulz. "A semi-monolithic detector providing intrinsic DOI-encoding and sub-200 ps CRT TOF-capabilities for clinical PET applications". In: *Medical Physics* 49.12 (2022), pp. 7469–7488. ISSN: 2473-4209. DOI: 10.1002/mp.16015.

[2] S. Naunheim, Y. Kuhl, T. Solf, D. Schug, V. Schulz, and F. Mueller. "Analysis of a convex time skew calibration for light sharing-based PET detectors". In: *Physics in Medicine & Biology* (2022). ISSN: 0031-9155. DOI: 10.1088/1361-6560/aca872.

[3] Y. Kuhl, S. Naunheim, D. Schug, V. Schulz, and F. Mueller. "Angular Irradiation Methods for DOI Calibration of Light-Sharing Detectors - A perspective for PET In-System Calibration". In: *IEEE Transactions on Radiation and Plasma Medical Sciences* (2023), pp. 1–1. ISSN: 2469-7303. DOI: 10.1109/TRPMS.2023.3272015.

[4] S. Naunheim, Y. Kuhl, D. Schug, V. Schulz, and F. Mueller. "Improving the Timing Resolution of Positron Emission Tomography Detectors Using Boosted Learning—A Residual Physics Approach". In: *IEEE Transactions on Neural Networks and Learning Systems* (2023), pp. 1–13. ISSN: 2162-2388. DOI: 10.1109/TNNLS.2023.3323131.

[5] Y. Kuhl, F. Mueller, S. Naunheim, M. Bovelett, J. Lambertus, D. Schug, B. Weissler, E. Gegenmantel, P. Gebhardt, and V. Schulz. "A finely segmented semi-monolithic detector tailored for high-resolution PET". In: *Medical Physics* (2024). ISSN: 2473-4209. DOI: 10.1002/mp.16928.

Pre-prints

[6] E. L. Yin-Grossmann, F. Mueller, Y. Kuhl, F. Schrank, S. Naunheim, D. Schug, and V. Schulz. *Evaluation of semi-monolithic scintillators with integrated RF shielding material for a higher integration of PET/MRI systems.* arXiv: 2208.10216. Aug. 2022. URL: http://arxiv.org/abs/2208.10216.

Talks

[7] S. Naunheim, T. Solf, Y. Kuhl, D. Schug, V. Schulz, and F. Müller. "Towards 200 ps CRT in DOI-capable Semi-Monolithic PET-Detectors for Clinical Applications". In: IEEE NSS MIC. Tokyo, Japan, Oct. 2021.

[8] S. Naunheim, T. Solf, Y. Kuhl, D. Schug, V. Schulz, and F. Mueller. "Exploring Timing Resolution Limits of Cost-Effective DOI-capable Semi-Monolithic Detectors for Total-Body PET". In: PSMR-TBP. Elba, Italy, 2021. DOI: 10.1055/s-0040-1708150.

[9] S. Naunheim, Y. Kuhl, D. Schug, V. Schulz, and F. Müller. "Pushing the CTR of (Semi-)Monolithic PET Detectors below 200 ps using Machine Learning". In: IEEE NSS MIC. Milano, Italy, Oct. 2022.

[10] S. Naunheim, Y. Kuhl, B. Weissler, D. Schug, H. Radermacher, F. Mueller, V. Nadig, L. Yin, K. Krueger, M. Peters, P. Gebhardt, N. Groß-Weege, T. Nolte, E. Gegenmantel, M. Borgo, J. van der Berghe, D. Gareis, T. Celik, S. Aussenhofer, A. Salomon, D. R. Schaart, R. Bakker, L. K. J, C. Kuhl, and V. Schulz. "The HYPMED PET/MRI Insert for Enhanced Diagnosis of Breast Cancer". In: PSMR-TBP. Elba, Italy, 2022.

[11] S. Naunheim, Y. Kuhl, D. Schug, V. Schulz, and F. Müller. "Towards a Machine Learning-Based Timing Calibration for TOF-PET Detectors – A Residual Physics Approach". In: Crystal Clear Collaboration (CCC) Meeting. Bydgoszcz, Poland, 2023.

Posters

[12] F. Mueller, S. Naunheim, D. Schug, T. Solf, and V. Schulz. "Optimization of a Semi-Monolithic Detector with high Spatial Resolution providing intrinsic DOI encoding and TOF-Capabilities". In: *2020 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Place: Boston. IEEE, 2020.

[13] Y. Kuhl, S. Naunheim, A. Mazur, M. Martin, R. Hetzel, D. Schug, V. Schulz, and F. Mueller. "Design and Experimental Characterization of a Multi Fan Beam Collimator for Fast Calibration of (Semi-)Monolithic Scintillators". In: *2021 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Place: Tokyo. IEEE, 2021.

[14] Y. Kuhl, S. Naunheim, A. Mazur, M. Martin, R. Hetzel, D. Schug, V. Schulz, and F. Mueller. "Fast Calibration of (Semi-)Monolithic Detectors based on a Multi-Fan-Beam Collimator". In: *Total-Body PET Conference*. Place: Edinburgh. 2021. DOI: 10.1186/s40658-018-0218-7.F..

[15] S. Naunheim, Y. Kuhl, B. Weissler, D. Schug, H. Radermacher, F. Mueller, V. Nadig, L. Yin, K. Krueger, M. Peters, P. Gebhardt, N. Groß-Weege, T. Nolte, E. Gegenmantel, M. Borgo, J. van der Berghe, D. Gareis, T. Celik, S. Aussenhofer, A. Salomon, D. R. Schaart, R. Bakker, L. K. J, C. Kuhl, and V. Schulz. "Enhanced Diagnosis of Breast Cancer With The HYPMED PET/MRI Insert". In: *IEEE NSS MIC 2022*. 2022.

[16] M. Bovelett, Y. Kuhl, S. Naunheim, D. Schug, V. Schulz, and F. Mueller. "Implementation and Evaluation of a 3D-dependend Energy-calibration algorithm". In: *IEEE NSS MIC 2023*. 2023.

[17] Y. Kuhl, F. Mueller, S. Naunheim, M. Bovelett, J. Lambertus, D. Schug, B. Weissler, E. Gegenmantel, P. Gebhardt, and V. Schulz. "A High-Resolution Semi-Monolithic Slab Detector tailored for Pre-Clinical PET". In: *2023 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Vancouver, Canada: IEEE, 2023.

[18] F. Mueller, S. Naunheim, Y. Kuhl, H. Radermacher, E. Gegenmantel, D. Schug, B. Weissler, and V. Schulz. "HD-MetaPET: Development of a long axial field-of-view (LAFOV) PET/MRI system with dedicated local PET detectors for spatial resolution enhancement". de. In: *Nuklearmedizin - NuclearMedicine*. Vol. 62. ISSN: 0029-5566, 2567-6407 Issue: 02 Journal Abbreviation: Nuklearmedizin. Georg Thieme Verlag, Apr. 2023, P108. DOI: 10.1055/s-0043-1766384. URL: http://www.thieme-connect.de/DOI/DOI?10.1055/s-0043-1766384 (visited on 07/06/2023).

[19] F. Mueller, A. Gonzalez-Montoro, M. Freire, S. Naunheim, V. Schulz, and A. J. Gonzalez. "Performance Comparison of two Machine Learning Methods for Positioning in Analog and Digitally Read-out Slab-detectors". In: *2023 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Vancouver, Canada: IEEE, 2023.

[20] F. Mueller, Y. Kuhl, S. Naunheim, M. Bovelett, T.-M. Mai, D. Schug, and V. Schulz. "Advances in Calibration and Data-Processing for a clinical semi-monolithic DOI-capable PET Detector reaching sub-200 ps Timing Resolution". In: *2023 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Vancouver, Canada: IEEE, 2023.

[21] V. Nadig, F. Mueller, J. Breuer, S. Gundacker, D. Schug, R. Mintzer, B. Weissler, S. Naunheim, Y. Kuhl, S. Cho, M. Judenhofer, and V. Schulz. "Characterization of a state-of-the-art clinical detector block with TOFPET2 ASIC readout". In: *2023 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Vancouver, Canada: IEEE, 2023.

[22] S. Naunheim, F. Mueller, Y. Kuhl, L. Lopes de Paiva, D. Schug, and V. Schulz. "First steps towards in-system applicability of a novel PET timing calibration method reaching sub-200 ps CTR". In: *2023 IEEE Nucl. Sci. Symp. Med. Imaging Conf.* Vancouver, Canada: IEEE, 2023.

[23] B. Weissler, D. Schug, E. Gegenmantel, F. Mueller, S. Naunheim, Y. Kuhl, H. Radermacher, K. Krueger, E. Yin-Grossmann, V. Nadig, K. Herweg, S. Gundacker, and V. Schulz. "Dedicated PET/MRI Research Systems based on the Hyperion III Detector Platform". de. In: *Nuklearmedizin - NuclearMedicine*. Vol. 62. ISSN: 0029-5566, 2567-6407 Issue: 02 Journal Abbreviation: Nuklearmedizin. Georg Thieme Verlag, Apr. 2023, P110. DOI: 10.1055/s-0043-1766386. URL: http://www.thieme-connect.de/DOI/DOI?10.1055/s-0043-1766386 (visited on 07/06/2023).

Awards

[24] S. Naunheim. *IEEE NPSS Christopher J. Thompson Student Paper Award - Best Poster Paper at MIC*. 2023.