

# The 8<sup>th</sup> International Conference on Image Formation in X-Ray Computed Tomography

CT MEETING 2024

August 5-9, Bamberg, Germany



## Scientific Program

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## Schedule CT Meeting 2024

	<b>Monday</b> <i>August 5</i>	<b>Tuesday</b> <i>August 6</i>	<b>Wednesday</b> <i>August 7</i>	<b>Thursday</b> <i>August 8</i>	<b>Friday</b> <i>August 9</i>
8:00 - 9:40 CEST		<b>Recon- struction</b> General opening remarks + 4 talks <i>(Page 7)</i>	<b>Photon- Counting</b> Basic short course + 3 talks <i>(Page 12)</i>	<b>AI and Physics</b> Basic short course + 3 talks <i>(Page 16)</i>	<b>Image Quality I</b> Basic short course + 3 talks <i>(Page 20)</i>
		<b>Coffee</b>	<b>Coffee</b>	<b>Coffee</b>	<b>Coffee</b>
10:00 - 11:40 CEST		<b>Missing Data</b> 5 talks <i>(Page 7)</i>	<b>Spectral</b> 5 talks <i>(Page 12)</i>	<b>Artifacts</b> 5 talks <i>(Page 16)</i>	<b>Image Quality II</b> 4 talks + Preview of Fully 3D 2025 and CT Meeting 2026 <i>(Page 20)</i>
		<b>Lunch</b>	<b>Lunch</b>	<b>Lunch</b>	<b>Lunch</b>
13:20 - 15:00 CEST		<b>Poster</b> Poster FF + 24 Posters <i>(Page 8)</i>	<b>Poster</b> Poster FF + 24 Posters <i>(Page 13)</i>	<b>Poster</b> Poster FF + 24 Posters <i>(Page 17)</i>	<b>Visit to EZRT</b> <i>(Page 21)</i>
		<b>Coffee</b>	<b>Coffee</b>	<b>Coffee</b>	
15:20 - 17:00 CEST	<b>Registration</b>	<b>Motion</b> 5 talks <i>(Page 10)</i>	<b>Deep and Industrial</b> 5 talks <i>(Page 15)</i>	<b>Novel CT</b> 5 talks <i>(Page 19)</i>	
17:00 - 17:40 CEST		<b>Plenary</b> Stephan Achenbach			
19:00 - 22:00 CEST	<b>Registration and Reception at Restaurant Plückers</b>	<b>Dinner at Residenz- schloss</b>		<b>Dinner at Klosterbräu</b>	

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## Tuesday, August 6

### Oral Session: Reconstruction

**Time** : Tuesday, 08:00 – 09:40

**Chairs** : Simon Rit and Wenli Wang

Time	Author	Title	Page
08:00 – 08:20	Marc Kachelrieß	<i>Opening remarks</i>	
08:20 – 08:40	Emil Y. Sidky, Xiangyi Wu, Xiaoyu Duan, Hailing Huang, Wei Zhao, Leo Y. Zhang, John Paul Phillips, Zheng Zhang, Buxin Chen, Dan Xia, Ingrid S. Reiser, Xiaochuan Pan	<i>A directional total variation minimization algorithm for isotropic resolution in digital breast tomosynthesis</i>	22
08:40 – 09:00	Yuedong Yuan, Linda-Sophie Schneider, Andreas Maier	<i>Application of gated recurrent units for CT trajectory optimization</i>	26
09:00 – 09:20	Shudong Li, Xiao Jiang, Yuan Shen, J. Webster Stayman	<i>CT reconstruction using nonlinear diffusion posterior sampling with detector blur modeling</i>	30
09:20 – 09:40	Zheng Zhang, Buxin Chen, Dan Xia, Emil Y. Sidky, Xiaochuan Pan	<i>Improved accuracy in CT reconstruction from transversely truncated data</i>	34

### Coffee Break

### Oral Session: Missing Data

**Time** : Tuesday, 10:00 – 11:40

**Chairs** : Xiaochuan Pan and Yuxiang Xing

Time	Author	Title	Page
10:00 – 10:20	Nimu Yuan, Jian Zhou, Jinyi Qi	<i>KVp-switching sparse-view CT images restoration with an edge prior conditioned DDPM</i>	38
10:20 – 10:40	Xiaoyue Li, Mark D. Butala, Gaoang Wang	<i>DiffusionX2CT: zero-shot 3D CBCT reconstruction from sparse-view X-rays with warping-based diffusion model</i>	42
10:40 – 11:00	Jiacheng Xie, Hua-Chieh Shao, Yunxiang Li, You Zhang	<i>Prior frequency guided diffusion model for limited angle (LA)-CBCT reconstruction</i>	46
11:00 – 11:20	Zhizhong Ran, Dimeng Xia, Shusen Zhao, Weibin Zhang, Xiangyuan Liu	<i>Diffusion model based limited-angle CT reconstruction for flat objects</i>	50
11:20 – 11:40	Anton Kabelac, Elias Eulig, Joscha Maier, Marc Kachelrieß	<i>Latent space reconstruction and its application to CT detruncation: latent detruncation</i>	54

### Lunch Break

**Poster Session: Poster Session 1****Time : Tuesday, 13:20 – 15:00**

	<b>Time</b>	<b>Author</b>	<b>Title</b>	<b>Page</b>
	13:20 – 13:40	<b>Poster Fast Forward:</b> 30 s - 60 s presentation for each poster		
<b>P1.1</b>	13:40 – 15:00	Gengsheng L. Zeng	<i>Morphing from the TV-norm to the l0-norm</i>	58
<b>P1.2</b>	13:40 – 15:00	Shalini Subramanian, W. Paul Segars, Ting-Yim Lee, Andreia V. Faria, Katsuyuki Taguchi	<i>CT brain perfusion assessment using X-ray angiography images</i>	62
<b>P1.3</b>	13:40 – 15:00	Zhennong Chen, Matthew Tivnan, Siyeop Yoon, Rui Hu, Quanzheng Li, Dufan Wu	<i>Optimizing conditional DDPM for head CT motion artifact reduction: brain vs. skull and 3D vs. 2D</i>	66
<b>P1.4</b>	13:40 – 15:00	Xiangyuan Liu, Shusen Zhao, Dimeng Xia, Weibin Zhang, Fengwei An	<i>Ring artifacts removal from CT images using an adaptive patch filter in the frequency domain</i>	70
<b>P1.5</b>	13:40 – 15:00	Fabian Jäger, Pascal Paysan, Michał Walczak, Marc Kachelrieß	<i>Rawdata-based higher order deep beam hardening correction (DBHC)</i>	74
<b>P1.6</b>	13:40 – 15:00	Yixing Huang, Fuxin Fan, Ahmed Gomaa, Andreas Maier, Rainer Fietkau, Christoph Bert, Florian Putz	<i>Task-specific data preparation for deep learning to reconstruct structures of interest from severely truncated CBCT data</i>	78
<b>P1.7</b>	13:40 – 15:00	Siyuan Mei, Fuxin Fan, Fabian Wagner, Mareike Thies, Mingxuan Gu, Yipeng Sun, Andreas Maier	<i>Segmentation-guided knee radiograph generation using conditional diffusion models</i>	82
<b>P1.8</b>	13:40 – 15:00	Gernot Kristof, Achim Byl, Elias Eulig, Marc Kachelrieß	<i>Noise-augmented deep denoising of CT images</i>	86
<b>P1.9</b>	13:40 – 15:00	Linda-Sophie Schneider, Gabriel Herl, Andreas Maier	<i>Integer optimization of CT trajectories using a discrete data completeness formulation</i>	90
<b>P1.10</b>	13:40 – 15:00	Fuxin Fan, Jingna Qiu, Yixing Huang, Andreas Maier	<i>Enhancing cross-modality synthesis: sub-volume merging for MRI-to-CT conversion</i>	94
<b>P1.11</b>	13:40 – 15:00	Yuang Wang, Siyeop Yoon, Rui Hu, Baihui Yu, Duhgoon Lee, Rajiv Gupta, Li Zhang, Zhiqiang Chen, Dufan Wu	<i>Noise controlled CT super-resolution with conditional diffusion model</i>	98
<b>P1.12</b>	13:40 – 15:00	Yirong Yang, Sen Wang, Grant M. Stevens, Adam S. Wang	<i>Tube voltage modulation for reducing noise in photon-counting CT</i>	102

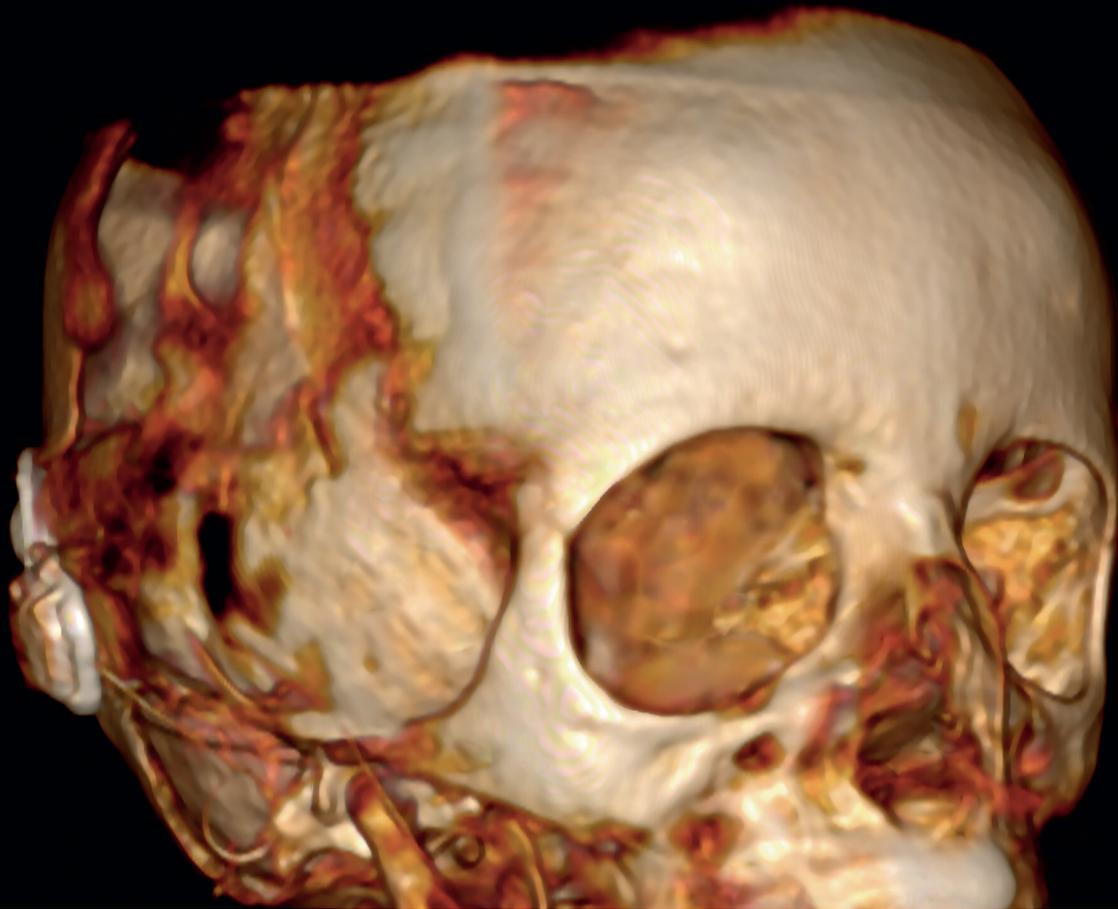
<b>P1.13</b>	13:40 – 15:00	Hongyang Zhu, Xin Lu, Yanwei Qin, Xinran Yu, Tianjiao Sun, Yunsong Zhao	<i>A dual-domain regularization method for ring artifact removal of X-ray CT</i>	106
<b>P1.14</b>	13:40 – 15:00	Maximilian Hammermann, Elias Eulig, Joscha Maier, Marc Kachelrieß	<i>Image-to-image translation for spatial alignment of sequential dual-energy CT acquisitions</i>	110
<b>P1.15</b>	13:40 – 15:00	Johannes Thalhammer, Manuel Schultheiß, Tina Dorosti, Tobias Lasser, Franz Pfeiffer, Daniela Pfeiffer, Florian Schaff	<i>Improving automated hemorrhage detection in sparse-view computed tomography via U-Net based artifact reduction</i>	114
<b>P1.16</b>	13:40 – 15:00	Margarete Kattau, Oliver Pickford Scienti, Ben Glocker, Dimitra Darambara	<i>Deep learning-based tumour segmentation on spectral photon-counting CT images</i>	118
<b>P1.17</b>	13:40 – 15:00	Alexander Jung, Gabriel Herl, Andreas Maier	<i>Towards efficient truncation correction in arbitrary geometry: residual projections for region of interest algebraic reconstruction</i>	122
<b>P1.18</b>	13:40 – 15:00	Ruifeng Chen, Yang Chen, Dong Liang, Yinsheng Li	<i>PNIR: a physics-constrained and noise-controlled iterative reconstruction method for photon-counting computed tomography</i>	126
<b>P1.19</b>	13:40 – 15:00	Yipeng Sun, Linda-Sophie Schneider, Fuxin Fan, Mareike Thies, Mingxuan Gu, Siyuan Mei, Yuzhong Zhou, Siming Bayer, Andreas Maier	<i>Data-driven filter design in FBP: transforming CT reconstruction with trainable fourier series</i>	130
<b>P1.20</b>	13:40 – 15:00	Jianpeng Gao, Liang Li, Liang Sheng, Yang Li, Baojun Duan, Yan Song, Dongwei Hei	<i>Diffusion model-based three-dimensional image reconstruction algorithm from five-view projections</i>	134
<b>P1.21</b>	13:40 – 15:00	Hsin Wu Tseng, Zhiyang Fu, Srinivasan Vedantham	<i>Simultaneous radiation dose and scatter reduction in breast CT imaging using a nearly half-sized detector with a self-supervised deep-learning algorithm</i>	138
<b>P1.22</b>	13:40 – 15:00	Richard N.K. Bismark, Georg Rose	<i>Preliminary simulation results in model-based iterative DECT with respect to convergence speed, truncation and dose-reduction via double half scan geometry</i>	142
<b>P1.23</b>	13:40 – 15:00	Min Le, Chunguang Zong, Liang Li	<i>Performance study of novel silicon photomultiplier devices in scintillator-based photon-counting detector for X-ray CT application</i>	146
<b>P1.24</b>	13:40 – 15:00	Okkyun Lee, Joonbeom Kim	<i>Calibration-based statistical framework for material decomposition in photon-counting CT</i>	150

**Oral Session : Motion****Time** : Tuesday, 15:20 – 17:00**Chairs** : Pascal Paysan and Cyril Riddell

<b>Time</b>	<b>Author</b>	<b>Title</b>	<b>Page</b>
15:20 – 15:40	Abdul Salam Rasmi Asraf Ali, Cristina Sarti, Claudio Landi, Andrea Fusiello	<i>Partial angle motion compensation for maxillo-facial cone beam CT</i>	154
15:40 – 16:00	Mareike Thies, Fabian Wagner, Noah Maul, Siyuan Mei, Mingxuan Gu, Laura Pfaff, Nastassia Vysotskaya, Haijun Yu, Andreas Maier	<i>On the influence of smoothness constraints in computed tomography motion compensation</i>	158
16:00 – 16:20	Katsuyuki Taguchi, Shalini Subramanian, W. Paul Segars	<i>Motion-compensated time-enhancement curve estimation for intra-operative brain perfusion assessment using a standard x-ray system with no gantry rotation</i>	162
16:20 – 16:40	Heyuan Huang, A. Lu, F. Gonzalez, T. Ehtiati, J. H. Siewerdsen, A. Sisniega	<i>Motion compensation for 4D digital subtraction angiography via deep autofocus and implicit neural motion models</i>	166
16:40 – 17:00	Hua-Chieh Shao, Tielige Mengke, Tinsu Pan, You Zhang	<i>Dynamic CBCT reconstruction using prior model-free spatiotemporal implicit neural representation (PMF-STINR)</i>	170

**Plenary Lecture: Cardiac CT: Evolution, Clinical Use and Insight****Time** : Tuesday, 17:00 – 17:40**Author** : Stephan Achenbach

In his plenary presentation “Cardiac CT: Evolution, Clinical Use and Insight”, Stephan Achenbach will highlight the high technical demands on CT for cardiac imaging as well as the evolution of technology, image quality and clinical applications in the past two decades, including the latest information on photon counting CT. He will also speak about insights that CT has helped provide regarding the mechanisms and epidemiology of coronary atherosclerosis, coronary artery disease and myocardial infarction as well as open questions that remain.



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## Wednesday, August 7

### Oral Session: Photon-Counting

**Time** : Wednesday, 08:00 – 09:40

**Chairs** : Ken Taguchi and Mats Persson

Time	Author	Title	Page
08:00 – 08:40	Thomas Flohr	<i>Basic short course: photon-counting CT</i>	
08:40 – 09:00	Linying Zhan, Guang-Hong Chen, Ke Li	<i>Detector deadtime estimation in photon-counting CT: a novel image-domain approach</i>	174
09:00 – 09:20	Okkyun Lee	<i>Application of the calibration-based statistical framework for material decomposition to digital mammography: a preliminary study</i>	178
09:20 – 09:40	Yukang Song, Xuezhi Wang, Zhi Deng, Hwei Gao	<i>Pileup-proof material decomposition for spectral CT using a simultaneous photon-counting and energy-integrating readout ASIC</i>	182

### Coffee Break

### Oral Session: Spectral

**Time** : Wednesday, 10:00 – 11:40

**Chairs** : Ke Li and Peter B. Noël

Time	Author	Title	Page
10:00 – 10:20	Altea Lorenzon, Stephen Z. Liu, Xiao Jiang, Grace J. Gang, J. Webster Stayman	<i>Joint material decomposition and scatter estimation for spectral CT</i>	186
10:20 – 10:40	Grace J. Gang	<i>Spectral orbits: combining spectral imaging and non-circular orbits for interventional CBCT</i>	190
10:40 – 11:00	John Paul Phillips, Emil Y. Sidky, Fatma Terzioglu, Ingrid S. Reiser, Guillaume Bal, Xiaochuan Pan	<i>Non-unique water and contrast agent solutions in dual-energy CT</i>	194
11:00 – 11:20	Edith Baader, Marc Kachelrieß	<i>Tube voltage modulation for contrast-enhanced CT scans</i>	198
11:20 – 11:40	Buxin Chen, Zheng Zhang, Dan Xia, Emil Y. Sidky, Xiaochuan Pan	<i>A basis-region data model for reconstructing multiple basis material from DECT data</i>	201

### Lunch Break

**Poster Session: Poster Session 2****Time : Wednesday, 13:20 – 15:00**

	<b>Time</b>	<b>Author</b>	<b>Title</b>	<b>Page</b>
	13:20 – 13:40	<b>Poster Fast Forward:</b> 30 s - 60 s presentation for each poster		
<b>P2.1</b>	13:40 – 15:00	Gengsheng L. Zeng	<i>Extreme few-view tomography without training data</i>	205
<b>P2.2</b>	13:40 – 15:00	Jonathan Bollig, Fabian Jäger, Marc Kachelrieß	<i>Deep bone extraction in X-ray projection domain</i>	209
<b>P2.3</b>	13:40 – 15:00	Hana Haseljic, Robert Frysich, Vojtech Kulvait, Thomas Werncke, Oliver Speck, Georg Rose	<i>The impact of arterial input function selection on dynamic liver perfusion imaging with cone-beam CT</i>	213
<b>P2.4</b>	13:40 – 15:00	Zeyu Yang, Raffael Lutz, Frank G. Zollner	<i>Development of a reusable 3D-printed phantom for contrast agent evaluation in photon-counting computed tomography</i>	217
<b>P2.5</b>	13:40 – 15:00	Michael S. Ibrahim, Emil Y. Sidky, Fatma Terzioglu, John Paul Phillips, Ingrid S. Reiser, Guillaume Bal, Xiaochuan Pan	<i>Variance-bias analysis of dual-energy CT image reconstruction for objects containing metal</i>	221
<b>P2.6</b>	13:40 – 15:00	Jiadan Song, Shaozhou Pu, Liang Li	<i>Three mode CT imaging of X-ray transmission, scatter and fluorescence photons</i>	225
<b>P2.7</b>	13:40 – 15:00	Scott S. Hsieh, Paurakh Rajbhandary	<i>Properties of an optimized estimator for attenuation at very low count rates</i>	229
<b>P2.8</b>	13:40 – 15:00	Peiyuan Guo, Longchao Men, Li Zhang, Zhentian Wang	<i>Dark-field CT reconstruction with a large field of view</i>	233
<b>P2.9</b>	13:40 – 15:00	David Frank, Tobias Lasser	<i>curadon: an open-source foundational library for highly efficient differentiable projectors in X-ray computed tomography</i>	237
<b>P2.10</b>	13:40 – 15:00	Gregory Ongie, Buxin Chen, Zheng Zhang, Dan Xia, Emil Y. Sidky, Xiaochuan Pan	<i>Simultaneous spectral calibration and image reconstruction in spectral CT with a sum of deltas spectrum model</i>	241
<b>P2.11</b>	13:40 – 15:00	Paul E. Kinahan, Darrin W. Byrd, Paul Desari, W. Paul Segars, Ehsan Abadi, Katie Olivas, Ehsan Samei	<i>Impact of patient respiratory motion variability on respiratory-gated PET with CT-based attenuation correction</i>	245
<b>P2.12</b>	13:40 – 15:00	Lorente Mur, F. C. Del Cerro, M. Desco, M. Abella	<i>Tomographic reconstruction for chest tomosynthesis based on deep learning</i>	248

<b>P2.13</b>	13:40 – 15:00	Mikhail Mikerov, Sjoerd A.M. Tunissen, Koen Michielsens, Ewoud J. Smit, Ioannis Sechopoulos	<i>Adaptation of a 4D noise filter for implementation on GPU</i>	252
<b>P2.14</b>	13:40 – 15:00	Yanwei Qin, Xin Lu, Hongyang Zhu, Yunsong Zhao, Xing Zhao	<i>An iterative 3D ring artifacts correction algorithm for CBCT</i>	256
<b>P2.15</b>	13:40 – 15:00	Xiang Zou, Yuxiang Xing	<i>A CL scanning with a single spiral trajectory</i>	260
<b>P2.16</b>	13:40 – 15:00	Ankit Kumar, Johann Kastner, Christoph Heinzl	<i>Using a patch wise deep U-Net CNN for the segmentation of pores in carbon fiber reinforced polymers</i>	264
<b>P2.17</b>	13:40 – 15:00	Olivia F. Sandvold, Yinglin Ge, Roland Proksa, Peter B. Noël	<i>Double bowtie design for high sensitivity pediatric spectral CT</i>	268
<b>P2.18</b>	13:40 – 15:00	Boris Vervenne, Jens Maebe, Stefaan Vandenberghe	<i>Feasibility study of a rectangular CT geometry for high throughput total-body PET-CT</i>	272
<b>P2.19</b>	13:40 – 15:00	Zhilei Wang, Hewei Gao	<i>Spectral cone-beam artifact reduction for dual-energy cone-beam CT</i>	276
<b>P2.20</b>	13:40 – 15:00	Faguo Yang, Andriy Andreyev, Matthew Andrew	<i>Reconstruction methods for scans of X-ray micro tomography with a rotation stage offset</i>	280
<b>P2.21</b>	13:40 – 15:00	Jannik Dettmer, George S.K. Fung, W. Paul Segars, Karl Stierstorfer	<i>Faster and more realistic CT projection data generation using digital phantoms and CT simulation software</i>	284
<b>P2.22</b>	13:40 – 15:00	David Leibold, Jacco van Leenen, Dennis R. Schaart, Marlies C. Goorden	<i>Initial results for joint reconstruction/decomposition of spectral cone-beam computed tomography data</i>	288
<b>P2.23</b>	13:40 – 15:00	Y. Boursier, F. Cannet, M. Dupont, S. Anthoine, C. Morel	<i>Spectral CT reconstruction with ProMeSCT: results on real data from PIXSCAN</i>	292
<b>P2.24</b>	13:40 – 15:00	Ville-Veikko Wettenhovi, Ari Hietanen, Ville Kolehmainen, Kati Niinimäki, Marko Vauhkonen	<i>Accelerated iterative reconstruction for cone beam CT using measurement-domain filtering</i>	296

**Oral Session : Deep and Industrial****Time : Wednesday, 15:20 – 17:00****Chairs : Nicole Maaß and J. Webster Stayman**

<b>Time</b>	<b>Author</b>	<b>Title</b>	<b>Page</b>
15:20 – 15:40	Aniket Pramanik, Singanallur V. Venkatakrishnan, Obaidullah Rahman, Amirkoushyar Zibari	<i>A learnt half-quadratic splitting-based algorithm for fast and high-quality industrial cone-beam CT reconstruction</i>	300
15:40 – 16:00	Nico Heinz, Andreas Maier, Christopher Syben, Richard Schielein	<i>Joining photogrammetry and X-ray computed tomography</i>	304
16:00 – 16:20	Yuzhong Zhou, Linda-Sophie Schneider, Yipeng Sun, Fuxin Fan, Andreas Maier	<i>A 2D sinogram-based approach to defect localization in computed tomography</i>	308
16:20 – 16:40	Chengze Ye, Linda-Sophie Schneider, Yipeng Sun, Andreas Maier	<i>Deep learning computed tomography based on the Defrise and Clack Algorithm</i>	312
16:40 – 17:00	Alejandro Lopez-Montes, T. McSkimming, W. Zbijewski, H. Huang, A. Skeats, C. Delnooz, B. Gonzales, A. Sisniega	<i>Latent diffusion reconstruction for stationary CT</i>	316

## Thursday, August 8

### Oral Session: AI and Physics

**Time** : Thursday, 08:00 – 09:40

**Chairs** : Guang-Hong Chen and Frédéric Noo

Time	Author	Title	Page
08:00 – 08:40	J. Webster Stayman	<i>Basic short course: combining physics and deep learning</i>	
08:40 – 09:00	Sen Wang, Maria J. Medrano, Jennie Cao, Wonkyeong Lee, Grant M. Stevens, Justin R. Tse, Adam S. Wang	<i>Learned tube current modulation from scout images for individualized organ-level CT dose and image quality</i>	320
09:00 – 09:20	Xiao Jiang, Grace J. Gang, J. Webster Stayman	<i>CT material decomposition using spectral diffusion posterior sampling</i>	324
09:20 – 09:40	Arjun Krishna, Ge Wang, Klaus Mueller	<i>Multi-conditioned denoising diffusion probabilistic model (mDDPM) for medical image synthesis</i>	328

### Coffee Break

### Oral Session: Artifacts

**Time** : Thursday, 10:00 – 11:40

**Chairs** : Grace Gang and Emil Sidky

Time	Author	Title	Page
10:00 – 10:20	Nele Blum, Thorsten M. Buzug, Maik Stille	<i>Integration of prior knowledge in application of neural networks for metal artifact reduction in CT</i>	332
10:20 – 10:40	Frédéric Noo, Z. Guo, K. Stierstorfer, G. S. K. Fung	<i>Beam hardening correction in diagnostic CT using a convex combination of water and bone</i>	336
10:40 – 11:00	Leening P. Liu, Kevin M. Brown, Amy E. Perkins, Michael C. Soulen, Peter B. Noël	<i>Quantitative metal artifact reduction algorithm for spectral CT thermometry</i>	340
11:00 – 11:20	Shiras Abdurahman, Robert Frysch, Daniel Punzet, Michael Manhart, Hannes Lucking, Stefan Lang, Arnd Dörfler, Georg Rose	<i>Evaluation of data consistency condition-based beam hardening and scatter corrections for clinical C-arm CBCT</i>	344
11:20 – 11:40	Yingxian Xia, Zhiqiang chen, Li Zhang, Yuxiang Xing, Hewei Gao	<i>ComptonNet: a spare-detector-guided deep learning framework for scatter estimation in multi-source dual-ring stationary CT</i>	348

### Lunch Break

**Poster Session: Poster Session 3****Time : Thursday, 13:20 – 15:00**

	<b>Time</b>	<b>Author</b>	<b>Title</b>	<b>Page</b>
	13:20 – 13:40	<b>Poster Fast Forward:</b> 30 s - 60 s presentation for each poster		
<b>P3.1</b>	13:40 – 15:00	Shengzi Zhao, Le Shen, Yuxiang Xing	<i>Experimental study on charge sharing correction: hardware or software?</i>	352
<b>P3.2</b>	13:40 – 15:00	Leening P. Liu, Martin V. Rybertt, Pouyan Pasyar, Nadav Shapira, Harold I. Litt, Peter B. Noël	<i>Spectral quantification in different lumen diameters for cardiovascular applications</i>	356
<b>P3.3</b>	13:40 – 15:00	Christopher Wiedeman, Chuang Niu, Mengzhou Li, Bruno De Man, Jonathan S Maltz, Ge Wang	<i>Photon-counting CT using a conditional diffusion model for deblurring and Texture-preservation</i>	360
<b>P3.4</b>	13:40 – 15:00	Bingxi He, Yongbo Wang, Wei Mu, Shuo Wang, Mengjie Fang, Di Dong, Jianhua Ma, Jie Tian	<i>Novel medical imaging diagnostics: unleashing artificial intelligence potential through sinogram-driven models</i>	364
<b>P3.5</b>	13:40 – 15:00	Mingye Wu, Jiayong Zhang, Paul Fitzgerald, James Jobin, Nandan Reddy, Anupama Debnath, Eri Haneda, Ying Fan, Jed Pack, Peter Lorraine, Michael Mahony, Bruno De Man	<i>An overview of the open-source CT simulation environment XCIST</i>	368
<b>P3.6</b>	13:40 – 15:00	Giavanna Jadick, Patrick La Riviere	<i>Accuracy of propagation-based phase-contrast CT under the projection approximation</i>	372
<b>P3.7</b>	13:40 – 15:00	Matthieu Laurendeau, Frederic Jolivet, Laurent Desbat, Guillaume Bernard, Sebastien Gorges, Simon Rit	<i>Image reconstruction with local directional total variation regularization using tomographic incompleteness maps</i>	376
<b>P3.8</b>	13:40 – 15:00	Markus Michen, Rajib Kumar Chanda	<i>Deep learning based scatter estimation using PYRO-NN: application to real-world objects</i>	380
<b>P3.9</b>	13:40 – 15:00	J. Guo, G. Khurana, L. Severance, Bahetihazi Maidu, A. Gonzalo, J.C. del Alamo, F. Contijoch	<i>CT gantry rotation time and reconstructed frame rate impact the accuracy of flow field estimation using a physics-informed neural network</i>	384
<b>P3.10</b>	13:40 – 15:00	Lauren M. Severance, Andrew M. Kahn, Juan C. del Alamo, Elliot R. McVeigh	<i>Estimation of blood flow parameters in the left atrial appendage from 4DCT dynamic contrast enhancement</i>	388
<b>P3.11</b>	13:40 – 15:00	Muge Du, Yinong Liu, Yuxiang Xing	<i>INFACT: generalizable INR with geometry-aware feature aggregation for CT reconstruction</i>	392
<b>P3.12</b>	13:40 – 15:00	Martina Nassi, Mikhail Mikerov, Alessandra Tomal, Koen Michielsen, Ioannis Sechopoulos	<i>Efficient simulation of biological tissue variability using Midgley's decomposition</i>	396

<b>P3.13</b>	13:40 – 15:00	Zhicong Yu, Georgios Prekas, Daniel Gagnon	<i>Principal component analysis for assessing spectral performance of photon-counting detectors – spectral distance index</i>	400
<b>P3.14</b>	13:40 – 15:00	Maria Magnusson, Mikael Sandborg, Asa Carlsson Tedgren, Alexandr Malusek	<i>The accuracy of CT numbers for DIRA with indata from a real dual-source DECT-scanner</i>	404
<b>P3.15</b>	13:40 – 15:00	Matthew Tivnan, Dufan Wu, Quanzheng Li	<i>Pseudo inverse diffusion models for generative CT image reconstruction from low dose data</i>	408
<b>P3.16</b>	13:40 – 15:00	Guyue Hu, Katharina Niepel, Franka Risch, Christopher Kurz, Matthias Wurl, Thomas Kröncke, Florian Schwarz, Guillaume Landry, Katia Parodi	<i>Assessment of proton relative stopping power from photon-counting CT data</i>	412
<b>P3.17</b>	13:40 – 15:00	Nadja Gruber, Johannes Schwab, Elke Gizewski, Markus Haltmeier	<i>Sparse2Inverse: self-supervised inversion of sparse-view CT data</i>	416
<b>P3.18</b>	13:40 – 15:00	Maxin Chen, Jonathan Bortfeldt, Daniel Berthe, George Dedes, Franz Pfeiffer, Katia Parodi	<i>Development of a photon-counting micro-CBCT for a small animal proton irradiation platform</i>	420
<b>P3.19</b>	13:40 – 15:00	Gregory Ongie	<i>Continuous domain reconstruction in CT imaging with coordinate-based neural networks</i>	423
<b>P3.20</b>	13:40 – 15:00	Kai Mei, Shobhit Sharma, Leonid Roshkovan, Steven Ross, Thomas Labno, Zhou Yu, Richard Thompson, Peter B. Noël	<i>Evaluation of photon-counting detector CT on 3D-printed lung phantom with digital lesions</i>	427
<b>P3.21</b>	13:40 – 15:00	Gurnoor Singh Khurana, Jinyuxuan Guo, Lauren Severance, Alejandro Gonzalo, Bahetihazi Maidu, Juan C. del Alamo, Francisco Contijoch	<i>SinoFlow: fluid flow estimation from sinograms using a physics informed neural network</i>	431
<b>P3.22</b>	13:40 – 15:00	Irene Hernández-Girón	<i>3D printed anthropomorphic phantoms for CT imaging – Are their attenuation properties consistent for different image reconstructions and CT manufacturers?</i>	435
<b>P3.23</b>	13:40 – 15:00	Elsa B. Pimenta, Luuk J. Oostveen, Paulo R. Costa	<i>Evaluation of the detectability index of CT thorax AI-based reconstruction protocols</i>	439
<b>P3.24</b>	13:40 – 15:00	Xiangyang Tang, Yi Yang	<i>Dark-field x-ray imaging of anisotropic subdel microstructures: rod-shaped air-bubbles</i>	443

**Oral Session : Novel CT****Time : Thursday, 15:20 – 17:00****Chairs : Bruno De Man and Adam Wang**

<b>Time</b>	<b>Author</b>	<b>Title</b>	<b>Page</b>
15:20 – 15:40	Grace J. Gang, Yiqun Q. Ma, Leening Liu, Peter B. Noël, J. Webster Stayman	<i>Multiple focal spots for high-resolution photon-counting CT</i>	447
15:40 – 16:00	Olivia F. Sandvold, Roland Proksa, Heiner Daerr, Kevin M. Brown, Thomas Koehler, Amy E. Perkins, Grace J. Gang, J. Webster Stayman, Ravindra M. Manjeshwar, Peter B. Noël	<i>Hybrid spectral CT: combining rapid kVp-switching and dual-layer detectors for high sensitivity iodine imaging</i>	451
16:00 – 16:20	Jingyan Xu, Frédéric Noo	<i>Multi-energy data acquisition using a stationary spatial spectral encoder (S3E)</i>	455
16:20 – 16:40	Scott S. Hsieh	<i>Three concepts to improve spatial resolution in next-generation CT scanners</i>	459
16:40 – 17:00	Linxi Shi, N. Robert Bennett, Adam Wang	<i>Single-scan quantitative cone-beam CT using a primary modulator and dual-layer flat-panel detector: a phantom study</i>	463

## Friday, August 9

### Oral Session: Image Quality I

**Time** : Friday, 08:00 – 09:40

**Chairs** : Karl Stierstorfer and Srinivasan Vedantham

Time	Author	Title	Page
08:00 – 08:40	Frédéric Noo	<i>Basic short course: quantification of image quality</i>	
08:40 – 09:00	Mathias Anton, Marcel Reginatto, Ulf Mader	<i>Nonparametric statistics for the quantification of noise and contrast in CT images</i>	467
09:00 – 09:20	Xi Chen, Tzu-Cheng Lee, Liang Cai	<i>Accelerating diffusion-based CT image restoration through sampling step sharing</i>	471
09:20 – 09:40	Jessica Y. Im, Neghemi Micah, Amy E. Perkins, Michael Geagan, Sven Kabus, Kai Mei, Peter B. Noël	<i>Lifelike and deformable lung phantoms for 4DCT imaging: a three-dimensional printing approach</i>	475

### Coffee Break

### Oral Session: Image Quality II

**Time** : Friday, 10:00 – 11:40

**Chairs** : Ioannis Sechopoulos and Scott Hsieh

Time	Author	Title	Page
10:00 – 10:20	Leening P. Liu, Pouyan Pasyar, Olivia F. Sandvold, Pooyan Sahbaee, Harold I. Litt, Peter B. Noël	<i>Long-term quantitative stability of a first-generation dual-source photon-counting CT</i>	479
10:20 – 10:40	John Hoffman, Morgan Daly	<i>Feasibility of an open-standard, accessible, reproducible modular insert phantom for quantitative imaging</i>	483
10:40 – 11:00	Wonkyeong Lee, Sen Wang, Maria Jose Medrano, Jennie Cao, Grant M. Stevens, Justin Ruey Tse, Adam S. Wang	<i>Organ-level noise estimation in CT images using deep learning</i>	487
11:00 – 11:20	Md Selim, Prabhat KC, Rongping Zeng	<i>Image resolution analysis using line-pair and disk-based MTF methods for deep learning CT image denoising</i>	491
11:20 – 11:40	Larry Zeng, Frédéric Noo, Marc Kachelrieß	<i>Preview of Fully 3D 2025, preview of CT Meeting 2026, and meeting adjourn</i>	

### Lunch Break

**Visit to EZRT**

**Time : Friday, 13:20 – 17:00**

A guided tour to the Fraunhofer Development Center for X-ray Technology (EZRT) will demonstrate various industrial CT systems, including the smallest and the largest CT scanner of the world. Busses will pick you up at the conference center Friday 13:20 and return at about five. This optional post meeting event is free of charge, but it requires preregistration.

**Time**

13:20 Bus departs from the Welcome Kongresshotel to the EZRT (close to Nürnberg)

14:00 Guided visit of the EZRT:

- Smallest CT scanner in the world
- Largest CT scanner in the world
- Robo CT
- Several other industrial systems

16:20 Bus departs from the EZRT

17:00 Arrival at the Welcome Kongresshotel in Bamberg

## Schedule CT Meeting 2024

	<b>Monday</b> <i>August 5</i>	<b>Tuesday</b> <i>August 6</i>	<b>Wednesday</b> <i>August 7</i>	<b>Thursday</b> <i>August 8</i>	<b>Friday</b> <i>August 9</i>
8:00 - 9:40 CEST		<b>Recon- struction</b> General opening remarks + 4 talks <i>(Page 7)</i>	<b>Photon- Counting</b> Basic short course + 3 talks <i>(Page 12)</i>	<b>AI and Physics</b> Basic short course + 3 talks <i>(Page 16)</i>	<b>Image Quality I</b> Basic short course + 3 talks <i>(Page 20)</i>
		<b>Coffee</b>	<b>Coffee</b>	<b>Coffee</b>	<b>Coffee</b>
10:00 - 11:40 CEST		<b>Missing Data</b> 5 talks <i>(Page 7)</i>	<b>Spectral</b> 5 talks <i>(Page 12)</i>	<b>Artifacts</b> 5 talks <i>(Page 16)</i>	<b>Image Quality II</b> 4 talks + Preview of Fully 3D 2025 and CT Meeting 2026 <i>(Page 20)</i>
		<b>Lunch</b>	<b>Lunch</b>	<b>Lunch</b>	<b>Lunch</b>
13:20 - 15:00 CEST		<b>Poster</b> Poster FF + 24 Posters <i>(Page 8)</i>	<b>Poster</b> Poster FF + 24 Posters <i>(Page 13)</i>	<b>Poster</b> Poster FF + 24 Posters <i>(Page 17)</i>	<b>Visit to EZRT</b> <i>(Page 21)</i>
		<b>Coffee</b>	<b>Coffee</b>	<b>Coffee</b>	
15:20 - 17:00 CEST	<b>Registration</b>	<b>Motion</b> 5 talks <i>(Page 10)</i>	<b>Deep and Industrial</b> 5 talks <i>(Page 15)</i>	<b>Novel CT</b> 5 talks <i>(Page 19)</i>	
17:00 - 17:40 CEST		<b>Plenary</b> Stephan Achenbach			
19:00 - 22:00 CEST	<b>Registration and Reception at Restaurant Plückers</b>	<b>Dinner at Residenz- schloss</b>		<b>Dinner at Klosterbräu</b>	