

Physics of Medical Imaging

This conference is no longer accepting submissions.

Late submissions may be considered subject to chair approval. For more information, please contact [Lillian Dickinson](#).

Important Dates

[SHOW](#) | [HIDE](#)

Abstract Due:
8 August 2018

Author Notification:
15 October 2018

Manuscript Due Date:
23 January 2019

Conference Committee

[SHOW](#) | [HIDE](#)

Conference Chairs

[Talv Gilat Schmidt](#), Marquette Univ. (United States)
[Guang-Hong Chen](#), Univ. of Wisconsin-Madison (United States)

Conference Co-Chair

[Hilde Bosmans](#), Katholieke Univ. Leuven (Belgium)

Program Committee

[Shiva Abbaszadeh](#), Univ. of Illinois at Urbana-Champaign (United States)
[Adam M. Alessio](#), Univ. of Washington (United States)
[Kirsten Boedeker](#), Toshiba Medical Research Institute USA (United States)
[Mini Das](#), Univ. of Houston (United States)
[Mats E. Danielsson](#), KTH Royal Institute of Technology (Sweden)
Maria Drangova, Robarts Research Institute (Canada)
[Rebecca Fahrig](#), Siemens Healthcare GmbH (Germany), Stanford Univ. School of Medicine (United States)
[Thomas G. Flohr](#), Siemens Healthcare GmbH (Germany)
[Arundhuti Ganguly](#), Varex Imaging Corp. (United States)
[Stephen J. Glick](#), U.S. Food and Drug Administration (United States), Univ. of Massachusetts Medical School (United States)
[Michael Grass](#), Philips Research (Germany)
[Marc Kachelriess](#), Deutsches Krebsforschungszentrum (Germany)
[Karim S. Karim](#), Univ. of Waterloo (Canada)

Program Committee continued...

[Hee-Joung Kim](#), Yonsei Univ. (Korea, Republic of)
[Patrick J. La Riviere](#), The Univ. of Chicago (United States)
[Quanzheng Li](#), Massachusetts General Hospital (United States)
[Joseph Y. Lo](#), Duke Univ. (United States)
[Peter B. Noël](#), Univ. of Pennsylvania (United States)
Frédéric Noo, The Univ. of Utah (United States)
[Jinyi Qi](#), Univ. of California, Davis (United States)
[John A. Rowlands](#), Thunder Bay Regional Research Institute (Canada)
[John M. Sabol](#), GE Healthcare (United States)
[Ioannis Sechopoulos](#), Radboud Univ. Medical Ctr. (Netherlands)
[Joseph W. Stayman](#), Johns Hopkins Univ. (United States)
[Anders Tingberg](#), Lund Univ. (Sweden)
[Yuxiang Xing](#), Tsinghua Univ. (China)
[John Yorkston](#), Carestream Health, Inc. (United States)
[Lifeng Yu](#), Mayo Clinic (United States)
[Wei Zhao](#), Stony Brook Medicine (United States)

Call for Papers

This conference will cover all aspects of image formation in medical imaging, including systems using ionizing radiation (x-rays, gamma rays) or non-ionizing techniques (ultrasound, optical, thermal, magnetic resonance, or magnetic particle imaging). Papers of a theoretical nature or papers reporting new experimental results are invited. Topics of particular interest include novel methods for image formation, experimental methods and results regarding image performance, algorithms for image reconstruction and correction, detector materials and electronic design, analytical and computer modeling of imaging systems, and physics of contrast media. Work directed toward the imaging of human subjects, small animals, or tissue specimens are welcome. The conference will also cover dedicated approaches for various imaging applications resulting from the above mentioned general imaging framework, for example cardiovascular or neuroimaging applications.

Original papers are especially requested in the following areas:

Imaging Science

- Physics of signal detection, image formation and signal degradation
- Object characterization and contrast mechanisms
- Characterization of detector and system performance (MTF, NPS, DQE, task- and observer-based)

Technology

- Novel medical imaging systems and methods including contrast media / nanoparticles
- Properties of scintillating, photoconductive, or other sensor materials
- Novel sources of radiation
- Image reconstruction methods (e.g., for CT, tomosynthesis, SPECT and PET, optical imaging, MRI, etc.)
- Machine learning approaches to image formation

- Multi-energy (spectral) x-ray and CT imaging
- Computer simulation of imaging systems including models for radiation sources, imaged objects, physical interactions, and detectors
- Phantoms (physical and numerical)
- Photon counting
- Proton based imaging
- Radiation (e.g., optical) and signal transport
- Radiation dose, dosimetry, and dose effects (risk), as well as possible stratification

Devices

- Advanced multi-slice or cone beam CT systems
- Advanced radiographic, fluoroscopic, or angiographic systems (including phase contrast and diffraction)
- Ultrasound, MRI, optical, thermal, magnetic particle imaging (and other non-ionizing radiation systems)
- Small animal imaging systems
- Nuclear medical imaging methods
- Multi-modality imaging devices
- Low-cost imaging devices with global health applications

Applications

- Cardiovascular imaging
- Neuroimaging
- Mammographic imaging
- Interventional imaging
- Imaging applications in therapy (e.g., radiation therapy, surgery, in-vivo verification)
- Advanced applications (clinical, translational, preclinical, basic science, biomarkers)
- Novel medical imaging for precision medicine applications

TOPIC AREAS: For this conference only

During the submission process, you will be asked to choose three different topics to assist in the review process.

- ALG - Algorithmic developments, simulations, calibration, classification, etc. (for reconstruction and machine learning use dedicated categories)
 - CARD - Cardiovascular imaging
 - CLIM - Clinical evaluation
 - CON - Physics of contrast enhancement using contrast media / nanoparticles
 - CT - All conventional and multi-energy CT topics (for cone beam use dedicated category)
 - CTCB - Cone beam CT
 - DET - Detector technology; scintillators, photoconductors, diodes, TFT
 - DIAG - Diagnostic imaging
 - DOSE - Radiation dose, dosimetry, and dose effects
 - IGI - Image guided interventions
 - IMG - Imaging methods including optical, MR, ultrasound, etc. (for x-ray, CT, or nuclear based methods use dedicated categories)
 - MAM - Imaging of the breast (any device)
 - METR - Measurement methods (MTF, NPS, DQE, eDQE, gDQE, Spectra, ...)
 - ML - Machine Learning applied to imaging physics (reconstruction, corrections, evaluations, etc...)
 - MULTI - Multi modality imaging
 - NEURO - Neuroimaging
 - NUC - Nuclear medical imaging innovations
 - ONC - Oncology
 - OTHER - Other methodology, systems or applications
 - PCI - Photon counting imaging
 - PER - Observer or perception-based performance evaluations of systems
 - PHS - Phase contrast imaging
 - PHT - Work involving development of phantoms or anatomical simulation models
 - PRI - Proton based imaging
 - RECON - Image reconstruction including CT, SPECT, PET, OCT and tomosynthesis
 - SMAX - Small animal or microscopic imaging
 - TSY - Tomosynthesis
 - XM - X-ray imaging, x-ray sources, scatter reduction techniques
 - XME - Multi-energy radiography or mammography
-