Xu Ji

Research Associate
Department of Medical Physics, University of Wisconsin-Madison
1111 Highland Ave, Madison, WI 53705
Email: xji32@wisc.edu

Education

- **Ph.D. in Medical Physics**, University of Wisconsin-Madison . . . . . 09/2015 - 07/2020
  Thesis: Application of photon counting detectors to x-ray CT systems
  Advisor: Prof. Guang-Hong Chen
- **B.S. in Physics**, Kuangyaming Honors School, Nanjing University . . . . . 09/2011 - 06/2015
  GPA: 94/100 (3.9/4.0)
  Ranking: 1/80

Research Interests

- Broad interests: X-ray imaging systems and algorithms
- Specific interests: I work on photon counting detector-based x-ray imaging and x-ray differential phase contrast imaging for medical purposes.

Experiences

- **Postdoctoral Researcher** . . . . . 08/2020 - present
  Department of Medical Physics at UW-Madison
- **Graduate Research Assistant** . . . . . 08/2015 - 07/2020
  Department of Medical Physics at UW-Madison
  Supervised by Prof. Guang-Hong Chen
- **Graduate Teaching Assistant** . . . . . Fall semesters in 2017, 2018 & 2019
  Course: Medical Physics 501 - Radiological Physics and Dosimetry
  Instructor: Prof. Guang-Hong Chen & Prof. Wesley Culberson
- **Visiting Student**, Department of Physics, Duke University . . . . . 08/2014 - 12/2014

Publications

- Journal publications

  1. **X. Ji**, R. Zhang, K. Li, and G.-H. Chen, "Dual energy differential phase contrast CT (DE-DPC-CT) imaging," IEEE Trans. Med. Imag. (2020).
  2. **X. Ji**, R. Zhang, K. Li, and G.-H. Chen, "Is high sensitivity always desirable for a grating-based phase contrast imaging system?" Med. Phys. 47: 1215-1228, (2019).
  3. **X. Ji**, R. Zhang, G.-H. Chen, and K. Li, "Task-driven optimization of the non-spectral mode of photon counting CT for intracranial hemorrhage assessment," Phys. Med. Biol. 64 215014 (2019).
  4. E. Harvey, M. Feng, **X. Ji**, R. Zhang, Y. Li, G.-H. Chen, and K. Li, "Impacts of photon counting CT to maximum intensity projection (MIP) images of cerebral CT angiography: theoretical and experimental studies," Phys. Med. Biol. 64 185015 (2019).

5. **X. Ji**, M. Feng, R. Zhang, G.-H. Chen, and K. Li, "An experimental method to directly measure DQE(k) at k = 0 for 2D x-ray imaging systems," Phys. Med. Biol. 64 075013 (2019).
6. **X. Ji**, R. Zhang, G.-H. Chen, and K. Li, "Impact of anti-charge sharing on the zerofrequency detective quantum efficiency of CdTe-based photon counting detector system: cascaded systems analysis and experimental validation," Phys. Med. Biol. 63, 095003 (2018).
7. Y. Ge*, **X. Ji***, R. Zhang, K. Li, and G.-H. Chen, "K-edge energy-based calibration method for photon counting detectors," Phys. Med. Biol. 63, 015022 (2018) (*co-first author)
8. **X. Ji**, Y. Ge, R. Zhang, K. Li, and G.-H. Chen, "Studies of signal estimation bias in grating-based x-ray multicontrast imaging," Med. Phys. 44: 2453-2465, (2017).

- Conference proceedings

1. **X. Ji**, R. Zhang, K. Li, and G.-H. Chen, "Phase contrast CT enabled three-material decomposition in spectral CT imaging," Proc. SPIE 113121B & Oral presentation at SPIE Medical Imaging (2020).
2. M. Feng, **X. Ji**, R. Zhang, J. R. Miller, G.-H. Chen, K. Li, "Impact of photon counting detector spectral distortion on virtual non-contrast CT imaging," Proc. SPIE 113121J (2020).
3. **X. Ji**, R. Zhang, K. Li, and G.-H. Chen, "Impact of the sensitivity factor on the signal-to-noise ratio in grating-based phase contrast imaging," Proc. SPIE 10948 & Oral presentation at SPIE Medical Imaging (2019).
4. **X. Ji**, M. Feng, R. Zhang, G.-H. Chen, and K. Li, "An experimental method to correct drift-induced error in zero-frequency DQE measurement," Proc. SPIE 10948 & Oral presentation at SPIE Medical Imaging (2019).
5. M. Feng, **X. Ji**, K. Treb, R. Zhang, G.-H. Chen, K. Li, "Spectrum optimization in photon counting detector based iodine K-edge CT imaging," Proc. SPIE 10948 (2019).
6. E. Harvey, M. Feng, **X. Ji**, R. Zhang, G.-H. Chen, K. Li, "Impacts of photon counting detector to cerebral CT angiography maximum intensity projection (MIP) images," Proc. SPIE 10948 (2019).
7. **X. Ji**, R. Zhang, G.-H. Chen, and K. Li, "Task-driven optimization of an experimental photon counting detector CT system for intracranial hemorrhage detection," Proc. SPIE 10573 & Oral presentation at SPIE Medical Imaging (2018).
8. K. Li, R. Zhang, J. Garrett, Y. Ge, **X. Ji**, and G.-H. Chen, "Design, construction, and initial results of a prototype multi-contrast x-ray breast imaging system," Proc. SPIE 10573 (2018).
9. **X. Ji**, R. Zhang, Y. Ge, K. Li, and G.-H. Chen, "Signal and noise characteristics of a CdTe-based photon counting detector: cascaded systems analysis and experimental studies," Proc. SPIE 10132 & Oral presentation at SPIE Medical Imaging (2017).
10. **X. Ji**, Y. Ge, R. Zhang, K. Li, and G.-H. Chen, "Weighted singular value decomposition (wSVD) to improve the radiation dose efficiency of grating-based x-ray phase contrast imaging with a photon counting detector," Proc. SPIE 10132 & Poster presentation at SPIE Medical Imaging (2017).
11. **X. Ji**, Y. Ge, R. Zhang, K. Li, and G.-H. Chen, "Potential bias in signal estimation for grating-based x-ray multi-contrast imaging," Proc. SPIE 10132 & Oral presentation at SPIE Medical Imaging (2017).

- Conference abstracts

1. **X. Ji**, M. Feng, R. Zhang, G.-H. Chen, and K. Li, "An experimental method to measure zero-Frequency DQE in the presence of system drift," Oral presentation at AAPM (2019).
2. **X. Ji**, M. Feng, R. Zhang, G.-H. Chen, and K. Li, "A practical model for the energy response function of photon counting detector systems with anti-charge sharing logic," Oral presentation at AAPM (2019).
3. **X. Ji**, R. Zhang, G.-H. Chen, and K. Li, "How does anti-charge sharing impact the zero-frequency DQE of photon counting detector systems? Theoretical framework and experimental validation," Oral presentation at AAPM (2018).

4. **X. Ji**, Y. Ge, R. Zhang, G.-H. Chen and K. Li, "Potential application of photon counting detector CT in intracranial hemorrhage detection," Oral presentation at RSNA (2017).
5. Y. Ge, R. Zhang, J. W. Garrett, **X. Ji**, J. P. Cruz-Bastida, G.-H. Chen and K. Li, "Initial experimental results from the first x-Ray dark field breast tomosynthesis prototype system," RSNA (2017).
6. **X. Ji**, Y. Ge, R. Zhang, K. Li and G.-H. Chen , "Is a high sensitivity interferometer always good for a grating-based differential phase contrast imaging system?" Oral presentation at XNPIG (2017).
7. Y. Ge, **X. Ji**, R. Zhang, K. Li, and G.-H. Chen, "Energy calibration of photon counting detectors based on measurement of x-ray attenuation curve of K-edge materials," AAPM (2017).
8. Y. Ge, **X. Ji**, R. Zhang, K. Li, and G.-H. Chen, "Radiation dose reduction in x-ray differential phase contrast breast imaging using an energy-resolved grating interferometer," RSNA (2016).
9. **X. Ji**, Y. Ge, R. Zhang, K. Li, and G.-H. Chen, "Low dose performance of a CdTe single photon counting detector and its application in radiation dose reduction for x-ray differential phase contrast imaging," Oral presentation at RSNA (2016).

Invited Talks

1. "Statistical properties of grating-based x-ray phase contrast imaging," Presented at Shenzhen Institutes of Advanced Technology, Chinese Academy of Science (2019).

Honors and Awards

- Runner-up, Robert F. Wagner all-conference best student paper award, SPIE Medical Imaging (2020).
- 1st place, Physics of medical imaging student paper award, SPIE Medical Imaging (2020).
- Trainee research prize, RSNA (2017).
- Expanding horizons grant award, AAPM (2016).
- Student travel award, RSNA (2016).
- China National Scholarship (2012).

Services

- Reviewer of Medical Physics, Journal of Applied Clinical Medical Physics, The International Journal of Cardiovascular Imaging and Radiation Measurements

Memberships

- AAPM student member . . . . . 2016 - 2020

Professional Certifications

- The American Board of Radiology - Medical Physics - Part 1