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Friday, September 11, 2026

12:00-1:00 pm

Morgridge Hall Room 1524

Zoom Meeting: 966 3372 9112

<https://uwmadison.zoom.us/j/96633729112?pwd=tHFc9i1dAAqmXe05uWtw8wXBIQZxGB.1>

Passcode: 621125

Of Photons and Pixels: How the transition to single photon pixels changes imaging

Abstract: Cameras and microscopes make measurements of photons to form images or extract other information from a scene. We now have access to various types of single photon or quanta cameras that are able to directly convert individual photons to digital information. This results in fundamental changes in what cameras can do, and how they should be designed.

This presentation shows examples from our recent research to illustrate how the difference between classical and quantum light substantially changes how we might approach designing a camera and what cameras can do. Our examples include low-light and high dynamic range imaging as well as imaging of scintillator fluorescence for radiation detection.

Bio: Andreas Velten is Associate Professor at the Department of Biostatistics and Medical Informatics and the Department of Electrical and Computer Engineering at the University of Wisconsin-Madison and directs the Computational Optics Group. He obtained his PhD in Physics at the University of New Mexico in Albuquerque and was a postdoctoral associate of the Camera Culture Group at the MIT Media Lab. He has been included in the MIT TR35 list of the world's top innovators under the age of 35 and is a senior member of NAI and SPIE as well as a fellow of Optica.



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