

## Chloroplasts to Tree Canopies



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Tuesday, Dec 6th, 2022  
Noon ET • [Zoom](#)

### Abstract

Computational imaging is both a highly abstract and extremely detailed field. From 40,000 feet, we formulate how sensing hardware and imaging software can work together optimally. But if we zoom in, each application space and sensing task will demand unique computational imaging solutions. In this talk, I'll discuss two computational imaging problems I've encountered in two very different domains. First, I'll talk about 3D quantitative refractive index imaging of microscopic phase objects. I will introduce a novel microscope design with increased measurement diversity to improve the 3D imaging system. Second, I'll discuss remote sensing imaging spectroscopy, or hyperspectral imaging, for Earth science applications. I'll show how leveraging atmospheric smoothness can enable us to better image surface properties of the Earth. I will then discuss the commonalities I've seen in computational imaging across scales and applications, and how we might improve our computational imaging frameworks for chloroplasts to tree canopies and everything in between.

### Bio

Dr. Regina Eckert is an early-career researcher at NASA's Jet Propulsion Laboratory working in the Imaging Spectroscopy group. She is interested in the joint design of sensing hardware and computational processing systems across imaging domains. Dr. Eckert graduated with her B.S. in Electrical Engineering from the University of New Mexico, and her M.S. and PhD in Electrical Engineering and Computer Sciences from the University of California, Berkeley. During her PhD, she developed computational imaging systems for high-resolution and high-dimensional phase microscopy. She was the recipient of the NSF Graduate Research Fellowship, the U.C. Berkeley Graduate Fellowship, and the U.C. Berkeley EECS Department Demetri Angelakos Memorial Achievement Award.

### Host

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