



# Washington University in St. Louis

## SCHOOL OF ENGINEERING & APPLIED SCIENCE

Preston M. Green Department of Electrical & Systems Engineering

### Seminar Announcement

**Barmak Heshmat, Ph.D.**  
**Research Scientist**  
**Department of Media Arts and Sciences**  
**MIT**



**Thursday, February 9, 2017**  
**Green Hall, Room 0120**  
**10:00 A.M.**

### Imaging at Relativistic Speeds; The New Space Between Sensing and Imaging

**Abstract:** Recent advances in photonic devices have enabled a diverse set of ultrafast imaging systems. These systems are crucial for studying photochemistry and photophysics of fast phenomena. However recently, ultrafast imaging and time-of-flight imaging are pushing at the forefront of sensing in nonconventional geometries (e.g. imaging through scattering and beyond occlusion). My talk will cover some of the most recent breakthroughs in ultrafast imaging systems, components, and methodologies. These breakthroughs enable exotic imaging modalities that can scan through closed books page by page, see around the corner and sense through large number of random probes, thus, enabling a wide range of industrial and scientific applications.

Researchers pursuing THz sensing, imaging, and optical material engineering should find this talk interesting.

**Bio:** Barmak Heshmat is a research scientist at the Massachusetts Institute of Technology. He leads the ‘inverse problems in light propagation’ subgroup in the Camera Culture group where they develop tools and solutions for imaging beyond conventional limitations of optics using ultrafast optics, nano optics and computational methods. Barmak has given invited talks at five TEDx events, NASA’s cross industry innovation summit, and numerous other venues and academic institutions.

Barmak received his Ph.D. (on optoelectronics and nanomaterials) at the University of Victoria in 2013 where he invented a THz receiver with an order of magnitude better sensitivity compared to the state of the art at the time. He has published almost 20 journal papers and filed 8 patents. Some of these papers and inventions have been featured on MIT cover page, BBC, TechCrunch and many other media outlets.

Host: R. Martin Arthur