

# Optical Society of America Ann Arbor Local Section

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**Tuesday, 16 April 2013, 8:00-9:45 pm**

**Location: U-M EECS Room 1005**

Electrical Engineering & Computer Science Building  
North Campus, University of Michigan  
Ann Arbor, MI 48109

## **Accelerating image recovery using variable splitting methods**

Dr. Jeffrey A. Fessler

University of Michigan, EECS Dept., Ann Arbor MI

**Abstract:** Model-based methods for applications in image denoising, image restoration and image reconstruction have been of increasing interest recently. In particular, statistical image reconstruction methods have been used in PET and SPECT commercially for well over a decade and have recently begun to appear commercially in X-ray CT systems, offering the possibility of reducing X-ray dose dramatically. Iterative image reconstruction methods are also poised to impact clinical MRI. Computation time is a significant challenge for iterative image reconstruction methods, particularly in X-ray CT and MRI. This talk will first review recent methods for accelerating image denoising and image restoration, and then describe new developments in accelerating optimization methods for image reconstruction.

**Bio-sketch:** Jeff Fessler received the BSEE degree from Purdue University in 1985, the MSEE degree from Stanford University in 1986, and the M.S. degree in Statistics from Stanford University in 1989. From 1985 to 1988 he was a National Science Foundation Graduate Fellow at Stanford, where he earned a Ph.D. in electrical engineering in 1990. He has worked at the University of Michigan since then. From 1991 to 1992 he was a Department of Energy Alexander Hollaender Post-Doctoral Fellow in the Division of Nuclear Medicine. From 1993 to 1995 he was an Assistant Professor in Nuclear Medicine and the Bioengineering Program. He is now a Professor in the Departments of Electrical Engineering and Computer Science, Radiology, and Biomedical Engineering.

He became a Fellow of the IEEE in 2006, for contributions to the theory and practice of image reconstruction. He received the Francois Erbsmann award for his IPMI93 presentation. He has served as an associate editor for IEEE Transactions on Medical Imaging and the IEEE Signal Processing Letters, and is currently serving as an associate editor for the IEEE Transactions on Image Processing. He has chaired the IEEE T-MI Steering Committee and the ISBI Steering Committee. He was co-chair of the 1997 SPIE conference on Image Reconstruction and Restoration, technical program co-chair of the 2002 IEEE International Symposium on Biomedical Imaging (ISBI), and general chair of ISBI 2007. His research interests are in statistical aspects of imaging problems, and he has supervised doctoral research in PET, SPECT, X-ray CT, MRI, and optical imaging problems.

**Map to seminar site:** [www.umich.edu/~newsinfo/umnc.html](http://www.umich.edu/~newsinfo/umnc.html) (or see AA OSA website). Free parking after 6 pm east of the Lurie Engineering Building (at the intersection of Beal & Bonisteel). All attendees are invited to join the AA OSA officers for dinner with the speaker at Paesano's Restaurant, 3411 Washtenaw Avenue (near US-23) in Ann Arbor at 6:00 pm, prior to the seminar. A map to the restaurant location can be found at <http://www.paesanosannarbor.com/contact/>.

**Next AA OSA Event:** Tuesday, 14 May 2013 - OPTICS & BEER NIGHT!

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