UCLA Engineering
HENRY SAMUELI SCHOOL OF ENGINEERING AND APPLIED SCIENCE

BIOENGINEERING

PRESENTS

Live-cell super-resolution microscopy in three dimensions using Multifocus 3D SIM

Thursday, March 2, 2017
12:00 – 1:00 PM
2101 ENGINEERING V

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ABSTRACT:

This seminar will describe live-cell 3D super-resolution microscopy by a proposed instant 3D imaging method combining Multifocus Microscopy (MFM) and 3D Structured Illumination Microscopy (SIM). Super-resolution microscopy allows us to image – with visible light – structures smaller than the classical limit of resolution (<< 200 nm) in fluorescently labeled living biological specimens. Cellular environments and processes, such as transcription and chromatin organization, are often highly heterogeneous, three-dimensional and dynamical. Using MFM technology I will create a super-resolution 3D SIM imaging system operating volumetrically at the sub-second timescale in living cells, carefully tailored to the needs of specific imaging projects of Biological collaborators.

BIOGRAPHY:

Dr. Sara Abrahamsson is a postdoctoral fellow in the laboratory of Dr. Cori Bargmann at the Rockefeller University. Her research includes innovation in microscopy, diffractive Fourier optics, nanofabrication and data analysis.

Dr. Abrahamsson received her M.S. in Engineering Physics at the Royal Institute of Technology, Stockholm. Following her passion for Fourier optics, she moved to California to develop the live 3D imaging method Multifocus Microscopy with Dr. Mats Gustafsson at UCSF. She received her Ph.D. in the joint program in Bioengineering of UCSF and UC Berkeley in 2012.

During her postdoc at the Rockefeller University, Dr. Abrahamsson was awarded the Leon Levy Fellowship in Neuroscience to build a 3D imaging system for studying neural circuit function in C. elegans. In this project she also worked at the Cornell NanoScale Science and Technology Facility in Ithaca to develop fabrication methods for diffractive optical elements. In the summertime, Dr. Abrahamsson has been a Whitman Investigator and Teaching Faculty in the summer courses at the Marine Biological Laboratory at Woods Hole. Her current and future work is focused on improving spatial and temporal resolution in live Bioimaging in three dimensions.