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Enrico Gratton received his doctorate in Physics in 1969 from the University of Rome. In 1986, while a Professor at the University of Illinois at Urbana-Champaign, Dr. Gratton was awarded a grant from NIH to establish the first national facility dedicated to fluorescence spectroscopy: The Laboratory for Fluorescence Dynamics (LFD). The LFD has reached international recognition for the development of instrumentation for time-resolved fluorescence spectroscopy using frequency domain methods. In 2006 the LFD moved to its current location at the University of California, Irvine. Dr. Gratton remains Principal Investigator of the LFD and holds joint appointments as Professor in the UCI departments of Biomedical Engineering and Physics, and also in the College of Medicine. Dr. Gratton collaborates with other UCI researchers in the areas of engineering, medicine, physical science, information and computer science, biological science, and UCI's Beckman Laser Institute (BLI).

ABSTRACT

Comprehensive correlation analysis (CCA) for super-resolution dynamic fingerprinting of cellular compartments using the Zeiss Airyscan detector.

The Airyscan detector is used as a new concept in fluctuation correlation spectroscopy using superresolution. This detector which acquires data simultaneously on 32 detectors arranged in a hexagonal array is used as a nanocamera with frame rate in the range of one million fps. We exploit this detector for fluctuation methods based on time correlation at single points or at a number of points simultaneously, as well as methods based on spatial correlation in the area covered by the detector. We developed a Comprehensive Correlation Analysis of molecular fluctuations that allows the large number of users of the ZEISS LSM 880 to access current fluctuation methods in one single platform.

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