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| EIDGENÖSSISCHE TECHNISCHE HOCHSCHULE LAUSANNE  POLITECNICO FEDERALE DI LOSANNA  SWISS FEDERAL INSTITUTE OF TECHNOLOGY LAUSANNE | |  |
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It is our pleasure to invite you to the following seminar:

**Wednesday May 29th, 2019 at 13:00-13:30**

**BSP 231, Cubotron/Unil, 2nd floor**

(Bâtiment sciences physiques UNIL)

**Multi-messenger optical microscopy**

by

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The possibility of integrating different light-matter interactions to form images and to correlate image data in optical microscopy is the starting point for the  design and implementation of a brand new multi-messenger optical microscope. The multi-messenger microscope could represent a new paradigm in data collection and image formation with a potential high impact in biophysics exploiting the possibility to “tune” the microscope across a large, almost unlimited, range of spatial and temporal resolution. Confocal, multiphoton, image scanning  and super resolved fluoresce microscopy can be comined with  label free approaches, including multiphoton, SHG and Mueller matrix microscopy. The "field of battle" is related to  for answering an open universal question in cellular and molecular biology: what are the local and global four-dimensional (x,y,z,t) chromatin structures in the nucleus that rule the compaction and function of the human genome in the interphase of cells and mitotic chromosomes? Within this scenario, expansion and light sheet microscopy will be considered as part of the multi-messenger approach. Liquid lenses, SPAD arrays and enforced deep learning approaches and brand new oriented detectors are key components for the development. The final “destination”of the multimodal collection of data is oriented to a “liquitopy” (liquid tunable microscopy) development [1].

[1] R. Won, “The super-resolution debate,” Nature Photonics, vol. 12, no. 5, pp. 259–260, Apr. 2018.

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|  | AD is Research Director of the Nanoscopy group at the Istituto Italiano di Tecnologia (IIT), IIT Deputy Director, Chair of Nikon Imaging Center at IIT, Full Professor of Applied Physics, Dept.of Physics, UNIGE, Academic of Accademia Ligure di Scienze e Lettere. AD published > 350 papers, >10000 citations, H=49(Google Scholar). He is Wiley Editor in Chief of Microscopy Research and Technique, IEEE  and OSA senior and SPIE fellow. He received the Emily M.Gray Award, Biophysical Society. AD is President of the Scientific Council of “Festival of Science”. His research is related to chromatin organization in living cells and to the developments of optical microscopy approaches and methods in biophysics.  <https://www.iit.it/people/alberto-diaspro>  Diaspro Lab website (in progress): https://[www.lambs.it](http://www.lambs.it) |