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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:

**Tuesday May 28th, 2019 at 16:00**

**BSP 407, Cubotron/Unil, 4th floor**

(Bâtiment sciences physiques UNIL)

**Molecular Resolution in Optical Nanoscopy by Breaking the Information Barrier**

by

**Dr. Francisco Balzarotti**

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Super-resolution microscopy methods such as STED and PALM/STORM have revolutionized far-field optical fluorescence microscopy by going beyond the diffraction limit of light and offering potentially unlimited resolution. In practice, however, the resolution of an image is limited by the finite photon budget of fluorescent probes, while their finite emission rate imposes a spatio-temporal trade-off in tracking applications.

By synergistically combining the strengths of both super-resolution families, the recently introduced MINFLUX concept tackles these limitations by rendering each emitted photon more informative. MINFLUX localizes an emitter by repeatedly probing its location with an excitation beam that features a zero of intensity. The emitter position is obtained from the knowledge of the beam shape and the number of photons collected at each location of the beam. When compared to conventional centroid-localization techniques, it is possible to reach a given precision by using fewer photons, or conversely, have an improved precision for the same photon budget.

In this seminar, I will present the foundations of super resolution optical microscopy and build up towards how MINFLUX works. I will discuss published results in nanoscopy (~1 nm resolution) and single molecule tracking and show recent extensions of the technique for multicolor three-dimensional operation within large fields of view for fixed and living cells.

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