

*Mapping Artificial and Natural Intelligence***Prof. Dr. Gabriel Aeppli***ETH Zürich and Paul Scherrer Institute, Switzerland***Friday, April 14, 2023; 3:30 p.m., PHYS 203**

*Refreshments served in PHYS 242 at 3:00 p.m.

It is remarkable that semiconductor technology is more advanced in its capacity to create complex systems than in the ability to image the outcomes. Conventional high-resolution microscopy for imaging the interior of three-dimensionally structured objects typically entails destructive sample preparation followed by electron microscopy of resulting surfaces or sections. Here we describe X-ray ptychography, a mixed real space/reciprocal space („wavelet“) technique, which is non-destructive and provides three-dimensional images at steadily improving resolution. We show applications to integrated circuit inspection and describe potential implications for neuroscience.

References:

<http://www.nature.com/nature/journal/v543/n7645/abs/nature21698.html><https://www.nature.com/articles/s41928-019-0309-z><https://ieeexplore.ieee.org/abstract/document/9771357>

Gabriel Aeppli got his degrees from MIT and started his career in industry (NEC, AT&T Bell Labs, and IBM Research Labs) where he worked on problems ranging from liquid crystals to superconductivity and magnetism. He is a Fellow of the US National Academy of Sciences (NAS) and a Fellow of the Royal Society (London) and received the Oliver E. Buckley Condensed Matter Prize. He was the founding director of the London Centre for Nanotechnology (LCN), co-founder of the Bio-Nano Consulting Company, and founding head of the Photon Science Division of the Paul Scherrer Institute (PSI) also his current position besides professorship at ETH-Zurich. His technical focus is on the implications and development of photon science and nanotechnology for information processing.