

Optical Computing Redux: computing with disorder

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Location: Tietotalo TB104

hosted by Prof. Goery Genty

Abstract:

Light propagation in disordered media, such as paint, clouds, or biological tissues, is a very challenging phenomenon, encompassing fundamental aspects in mesoscopic and statistical physics, transport, material science, etc. It is also of utmost applied importance, in particular for imaging. Wavefront shaping, the ability to manipulate light using e.g. spatial light modulators, has in the last decade revolutionized the ability to image through or in complex media.

In this seminar, I will discuss how the same phenomenon can be leveraged for a variety of optical computing tasks, ranging from classification to time-series predictions to optimization problems, and how it provides a potential solution to accelerate a wide range of Machine learning problem, at large scale, fast speed, and low energy consumption.