CESQ Colloquium

Tuesday November 4 @ 3 PM

Seminar Room, Centre Européen de Sciences Quantiques,
Campus de Cronenbourg

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Large-scale optical machine learning exploiting disorder

Photonics is an ideal technology for low-energy and ultrafast information processing, and photonic computing is currently seeing a surge of interest, with exciting perspectives. In Machine Learning, optics is naturally well suited to implement a layer of neural networks, via either integrated or free-space approaches. However, most proof-of-concepts of optical machine learning to date are limited to modest dimensions, single or relatively shallow artificial neural layer networks, and to relatively simple ML tasks. I will show how multiple scattering of light allows performing optically an interesting operation for machine learning: large scale random matrix multiplication, I will present their application to various tasks, and discuss how we can extend this concept beyond single layers operations, and to modern machine learning tasks.

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