



Ph. D. in machine learning / fundamental physics

Automated search of new materials for single-photon sources

The ability to shape and alter light propagation with electrical and mechanical control parameters is at the heart of the quantum information technologies, in particular to build reliable one photon sources, used in quantum cryptography. It is thus of crucial importance to discover and design efficient electro- and acousto-optic materials, in particular in the optical–THz frequency range, for which most major telecommunication technologies operate. On the other hand, the advent of new numerical method for efficient computation of physical properties allows now to explore a vast number of materials. The resulting databases can be operated on by advanced statistical methods (machine learning) to guide the exploration of new, innovative electro- and acousto-optic materials. The proposed Ph. D. thesis will lead you from the realm of Materials Science, in particular Density Functional Theory (an efficient numerical methods to simulate materials at the atomic scale), to the shores of computer science, before the sea of applied mathematics and machine learning. Are you ready to walk the path with us?

Location: SPMS laboratory, CentraleSupélec/Université Paris-Saclay

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