Università degli Studi di Trieste
Dipartimento di Fisica
Seminario

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Tuesday, November 6, 3.00 PM – Stasi Lecture Room, Leonardo building – Strada Costiera 11 – Trieste

Machine learning for quantum protocols: quantum-state and gate synthesis assisted by artificial intelligence

Learning is not a prerogative of just humans or animals. Artificial "intelligent agents'' are devices that, by acquiring information on their environment, apply strategies to maximise the chance of succeeding in a given goal. Machine learning, which is a subtopic of artificial intelligence, aims precisely at devising such strategies. Recently, it was realised that its application to quantum problems can lead to significant computational advantages, and great enhancement of quantum information processing protocols.

In this talk I will illustrate the application of machine learning to a problem of "quantum gate synthesis", i.e. the identification of the best suited configuration of interactions among the elements of a computational register that realises a desired unitary transformation. I will then show how the same logic can be applied to problems of quantum state engineering in large Hilbert spaces, illustrating a recent experiment performed on a linear-optics platform that exploits the angular momentum of light.

Organizzazione a cura di: A. Bassi, M. Carlesso

Everyone interested in the topic is welcome to attend

Informazioni: seminari@ts.infn.it