

# A generalized eigenvalue problem via a quantum annealer

*Tuesday, 15 November 2022 10:15 (20 minutes)*

As is well-known, eigenvalue problems have to be solved in many areas of physics and applied sciences. While several algorithms exist for classical computing, the possibilities of quantum computing in this field are not entirely explored. In this talk, we will present a quantum annealer algorithm based on the D-wave system that has the aim of solving the Generalized Eigenvalue Problem for the Symmetric and for the first time (to our knowledge) the Non-symmetric case. As an example, we will present an application of this algorithm to the homogeneous Bethe-Salpeter equation, that allows to non-perturbatively describe the dynamics in a bound system, within the relativistic quantum-field theory. The algorithm has been developed in the context of an approved project of Q@TN.

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**Session Classification:** Martedi

**Track Classification:** Fondazionale