UNIVERSITÀ DI TRENTO

Corso di dottorato in Fisica / PhD in Physics
Ciclo 36 / Cycle 36
A.Y. 2020-2021

Scholarship R

Topic: **Quantum Computing Algorithms for Nuclear Physics**
Department of Physics
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Synthetic description of the activity and expected research outcome *This doctoral research project is part of a collaboration with Lawrence Livermore National Laboratory (LLNL).* The nuclear many-body problem presents some peculiar features that provide an ideal playground for thinking an applying novel quantum algorithms to be used on existing quantum testbeds. The candidate will explore possible new ways to describe the time evolution of a many-nucleon system to describe elastic and anelastic (dissipative) reactions with a growing number of bodies. The algorithms will be mostly targeted to run on the existing quantum testbed at LLNL, based upon superconducting cavities driven by optimal control techniques, which will also be one of the subjects of interest.
Ideal candidate (skills and competencies)**:** The ideal candidate has a MSc in Theoretical Physics, Applied Mathematics, or closely related disciplines. Computational skills, and in particular Python and/or C/C++ coding, are most welcome. No specific background in nuclear physics is required. The candidate should be willing to travel and to spend extended periods abroad.