MOQS Molecular Quantum Simulations

1 Phd position open in the field of Quantum Science – Marie Sklodowska-Curie ITN

Do you want to be one of the future experts in the fast-evolving field of quantum science and technology?

In MOQS project, chemistry and materials sciences as well as classical and quantum computer science are brought together to develop **new and powerful algorithms and technologies**, with applications ranging from physics, chemistry to the the pharmaceutical industry.

Within this network is currently available **1 PhD position supported by a fellowship from the Marie Sklodowska-Curie Innovative Training Network MOQS** (MOlecular Quantum Simulations).

Main host Institution: University of L'Aquila (Italy)

Secondment Institutions: IBM-Reseach, Zurich (Switzerland) and CINECA, Bologna (Italy)

Topic description:
The project deals with the development of new strategies to tackle the electronic structure of molecular systems using quantum computers. Currently available quantum devices in combination with algorithms such as the Variational Quantum Eigensolver are a valuable route to reach the chemical accuracy of the evaluation of ground state molecular energies. A crucial role in this process is to design wavefunctions that are at the same time accurate and compact, in order to have low-depth circuits using a small number of gate operations. The PhD student will develop hardware efficient wavefunctions and algorithms inspired by many-body and quantum chemistry techniques. Error mitigation schemes will be also developed to further increase the accuracy of the obtained results. The developed methodology will be applied to several chemical systems, including well-known correlated and "difficult" cases in quantum chemistry.

MARIE CURIE ACTIONS

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About MOQS project

An international consortium will train together 15 phd students ('early stage researchers', ESRs) in the fields of quantum simulations of molecular structure and dynamics, at the crossroad of chemistry, solid-state and quantum optical physics, materials, classical and quantum computer science.

An EU project

MoQS is a European Innovative Training Network (ITN). The MoQS programme has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement number 955479.

MOQS Molecular Quantum Simulations

An international, interdisciplinary and intersectoral training and research project

- Access to world class research infrastructure
- Individually tailored training programme
- secondments at leading institutions and companies within the consortium
- Expertise spanning 8 academic and 5 industrial partners
- An individualized career development programme
- Attractive employment conditions including a competitive salary (details on the website www.moqs.eu)

Further information
www.moqs.eu
info@moqs.eu

Conditions

- Candidates must not have resided or carried out their main activities (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the recruitment.
- Candidates cannot yet hold a PhD in any field and should have less than four years of research experience.
- The position is open from now to **Sept. 2nd 2021**. Expected starting date is 1st Oct. 2021.
- **Please apply directly from the University of L'Aquila website: website, announcement, application procedure instructions**
- Further information is available at the consortium website www.moqs.eu

Our consortium