QuantHEP – Quantum Computing Solutions for High-Energy Physics

Call 2019
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- Yasser Omar, IST-ID, Portugal
- Andris Ambainis, LU, Latvia
- Simone Montangero, INFN Padova, Italy (together with E. Ercolessi and P. Facchi)
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quanthep.eu twitter.com/QuantHEP
PROJECT PROGRESS (highlights)

CHALLENGE: Analysing data from HEP experiments is one of the hardest computational tasks in the World (100 Tb/s), as is simulating the corresponding processes.
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SOLUTION? Can quantum computing offer solutions?
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**IMPLEMENTATION:**
- First proven quantum speedup for a HEP problem!
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• Rydberg-atom quantum simulator for lattice gauge theories.
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HURDLES: No physical meetings between 01/2020 and 09/2022.
IMPACT (RRI aspects)

**GENDER:** 2/6 female co-PIs, gender balance in the future QuantHEP Conference.
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OPEN SCIENCE: all articles available in the project web site quanthep.eu & in the arXiv.
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**SCIENCE EDUCATION:**
- Monthly online [QuantHEP Seminar](http://quanthep.eu), since 10/2022: 757 subscribers, 9,794 views.
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**PUBLIC ENGAGEMENT**:
- Online public talks at [World Quantum Day – 14 April](http://worldquantumday), in Uzbekistan and in (S.)Africa.
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- Contributions to the Advisory Board of the Quantum Technology Initiative at CERN.
This project has received funding from the European Union’s Horizon 2020 research and innovation programme under Grant Agreement No. 731473.