



QUantum advantage via non-linear BOSon Sampling

Fact Sheet

Project Information

QU-BOSS

Grant agreement ID: 884676

[Project website](#)

DOI

[10.3030/884676](https://doi.org/10.3030/884676)

EC signature date

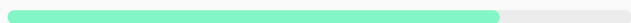
6 April 2020

Start date

1 August 2020

End date

31 July 2026



Funded under

EXCELLENT SCIENCE - European Research Council (ERC)

Total cost

€ 2 875 000,00

EU contribution

€ 2 875 000,00

Coordinated by

UNIVERSITA DEGLI STUDI DI
ROMA LA SAPIENZA



Italy

Project description

The winding (non-linear) road toward a quantum leap in computational power

Quantum computing has long held the imagination of scientists and the public alike as the next great frontier, far beyond supercomputing. Relying on qubits rather than conventional bits, using the properties of quantum physics to store data and perform computations, these machines have now been realised at small scales. The fundamental goal is getting to the quantum advantage, realising the quantum computer's promise to solve problems intractable with conventional ones. The EU-funded QU-BOSS project is planning to do so using a novel approach involving non-linear dynamics embedded within integrated photonics technology.

Fields of science (EuroSciVoc)

[engineering and technology](#) > [electrical engineering](#), [electronic engineering](#), [information engineering](#) > [electronic engineering](#) > [computer hardware](#) > **[quantum computers](#)**

[natural sciences](#) > [computer and information sciences](#) > [artificial intelligence](#) > **[machine learning](#)**

[natural sciences](#) > [physical sciences](#) > [optics](#) > **[nonlinear optics](#)**

[natural sciences](#) > [physical sciences](#) > [theoretical physics](#) > [particle physics](#) > **[photons](#)**

[natural sciences](#) > [computer and information sciences](#) > [artificial intelligence](#) > **[computational intelligence](#)**



Keywords

[Integrated quantum photonics](#)

[single photon sources](#)

[reconfigurable circuits](#)

[Boson Sampling](#)

[quantum machine learning](#)

[quantum networks](#)

[machine learning enhanced quantum information](#)

Programme(s)

[H2020-EU.1.1. - EXCELLENT SCIENCE - European Research Council \(ERC\)](#)

MAIN PROGRAMME

Topic(s)

[ERC-2019-ADG - ERC Advanced Grant](#)

Call for proposal

[ERC-2019-ADG](#)

[See other projects for this call](#)

Funding Scheme

Host institution



UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA

Net EU contribution

€ 2 305 000,00

Total cost

€ 2 305 000,00

Address

Piazzale Aldo Moro 5

00185 Roma

 Italy 

Region

Centro (IT) > Lazio > Roma

Activity type

Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Beneficiaries (3)



UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA

 Italy

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Total cost

€ 2 305 000,00



CONSIGLIO NAZIONALE DELLE RICERCHE

 Italy

Net EU contribution

€ 380 000,00

Address

PIAZZALE ALDO MORO 7

00185 Roma 

Region

Centro (IT) > Lazio > Roma

Activity type

Research Organisations

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 380 000,00



INTERNATIONAL IBERIAN NANOTECHNOLOGY LABORATORY

 Portugal

Net EU contribution

€ 190 000,00

Address

AVENIDA MESTRE JOSE VEIGA

4715-330 Braga 

Region

Activity type

Research Organisations

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 190 000,00

Last update: 28 December 2023

Permalink: <https://cordis.europa.eu/project/id/884676>

European Union, 2025

