Flat Bands for Quantum Metrology

Fact Sheet

Project Information

FLATS

Grant agreement ID: 101099139

DOI
10.3030/101099139

Funded under
The European Innovation Council (EIC)

Total cost
€ 3 875 747,50

EU contribution
€ 3 875 747,50

Coordinated by
COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

France

Project description

Quantum-enhanced measurements in metrology

It is possible to limit statistical error in metrology and sensing by using quantum systems. These quantum systems can reach the Heisenberg limit, which is proportional to 1/N for measurements. However, applying quantum standards and sensors is challenging due to their intrinsic incompatibility of their working conditions. The EU-funded FLATS project proposes to use twisted bilayer graphene as a multi-phenomenon platform to develop electrical quantum metrology standards that can work under compatible conditions. It will also create a new generation of metrological sensors that go beyond the International System of units. The common platform will
enable the establishment of a single multi-use on-chip quantum lab. The results will be the first step toward quantum-enhanced measurements for metrological applications.

### Fields of science

- engineering and technology > nanotechnology > nano-materials > two-dimensional nanostructures > graphene
- natural sciences > physical sciences > quantum physics
- engineering and technology > electrical engineering, electronic engineering, information engineering > electronic engineering > sensors
- natural sciences > physical sciences > electromagnetism and electronics > superconductivity

### Keywords

- metrology bilayer graphene flat bands mesoscopic physics

### Programme(s)

- HORIZON.3.1 - The European Innovation Council (EIC)

### Topic(s)

- HORIZON-EIC-2022-PATHFINDEROPEN-01-01 - EIC Pathfinder Open 2022

### Call for proposal

- HORIZON-EIC-2022-PATHFINDEROPEN-01

See other projects for this call

### Funding Scheme

- EIC - EIC
Coordinator

COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

Net EU contribution
€ 957,500,00

Address
Rue leblanc 25
75015 Paris
France

Region
Ile-de-France > Ile-de-France > Paris

Activity type
Research Organisations

Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network

Other funding
€ 0,00

Participants (6)

UNIVERSITE PARIS-SA CLAY

France

Net EU contribution
€ 428,405,00

Address
Batiment breguet - 3 rue joliot curie
91190 Gif-sur-yvette

Region
Ile-de-France > Ile-de-France > Essonne

Activity type
Higher or Secondary Education Establishments

Links
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS
France
Net EU contribution
€ 243 965,00
Address
Rue michel ange 3
75794 Paris
Region
Ile-de-France > Ile-de-France > Paris
Activity type
Research Organisations
Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network
Other funding
€ 0,00

LABORATOIRE NATIONAL DE METROLOGIE ET D'ESSAIS
France
Net EU contribution
€ 670 000,00
Address
Rue gaston boissier 1
75724 Paris
Region
Ile-de-France > Ile-de-France > Paris
Activity type
LUDWIG-MAXIMILIAN-S-UNIVERSITAET MUNCHEN

Germany

Net EU contribution
€ 656 750,00

Address
Geschwister scholl platz 1
80539 Muenchen

Region
Bayern > Oberbayern > München, Kreisfreie Stadt

Activity type
Higher or Secondary Education Establishments

UNIVERSITE CATHOLIQUE DE LOUVAIN

Belgium

Net EU contribution
€ 700 000,00

Address
Place de l universite 1
1348 Louvain la neuve

Region

5 of 7
Région wallonne > Prov. Brabant Wallon > Arr. Nivelles

Activity type
Higher or Secondary Education Establishments

Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Other funding
€ 0,00

GESELLSCHAFT FUR ANGEWANDTE MIKRO UND OPTOELEKTRONIK MIT BESCHRANKTERHAFTUNG AMO GMBH

Germany

Net EU contribution
€ 219 127,50

Address
Otto blumenthal strasse
52074 Aachen

SME  Yes

Region
Nordrhein-Westfalen > Köln > Städteregion Aachen

Activity type
Other

Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Other funding
€ 0,00

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6 of 7