


## Company Description

BCAM is the Research Center on Applied Mathematics created with the support of the Basque Government and the University of the Basque Country, which aims to strengthen the Basque science and technology system, by performing interdisciplinary research in the frontiers of mathematics, talented scientists' training and attraction, so the excellence of our results are recognized by the Society

## Information

 Deadline: 2023-04-07  
 Category: Business  
 Province: Bizkaia

 Country: Basque Country  
 City: Bilbao

## Company

BCAM



## Main functions, requisites & benefits

### Main functions

Quantum correlations are at the heart of the physics of composite systems. Entanglement arguably is the most striking - and at the same time most well-known - type of quantum correlations. In this PhD project, we aim at new mathematical results for the correlation properties of quantum states by studying the structure of the quantum mechanical state space from a geometrical point of view. Our objective is the development of intuitive concepts for the geometry of the state space, as well as of the measurements, along with the mathematical methods to formally describe the latter, the so-called generalized Bloch representation, which will lead to new insight into the elements of entanglement and correlation theory from an entirely different perspective and thus open the path to a deeper understanding of the principles governing quantum-mechanical correlations.

### Requisites

Promising young researchers.

Applicants must have their PhD completed before September 2023.

Master degree preferable in Mathematics or theoretical Physics with a sufficiently good knowledge of quantum mechanics (and possibly quantum information theory). This master should be preferably obtained before July 2023.

Skills and track-record: Good interpersonal skills. A proven track record in high level research institutions and universities. Demonstrated ability to work independently and as part of a collaborative research team. Ability to present and publish research outcomes in spoken (talks) and written (papers) form. Fluency in spoken and written English. The preferred candidate will have: Strong background in quantum mechanics and quantum information. Strong background in mathematics / linear algebra / matrix analysis / convex analysis / inequalities. Good programming skills in Mathematica and/or MatLab, Python.

### Benefits

Contract: 3 years The gross annual salary of the Fellowship will be 18.450 the first year, and the following years must be reviewed yearly based on Spanish EPIF legislation.

Additionally, we offer a moving allowance up to 1.000€. Should the researcher have a family at the time of recruitment: 1.000€ gross in a single payment will be offered (you must be married-official register or with children and the certificate to prove it must be sent). 600€ gross per year/per child (up to 2 children) will be offered (the certificate to prove it must be sent). Free access to the Public Health System in Spain is provided to all employees