

ALBERTO E. RODRÍGUEZ-MOLDES SEBASTIÁN

Universitat de València
roseal@alumni.uv.es

April 1, 2021

Addressed to ,
MSc in Quantum Science and Technology,
Universitat de Barcelona

Dear Sir/Madam,

I am writing in regards to the application in the MSc of Quantum Science and Technology at the University of Barcelona. My name is Alberto Emilio Rodríguez-Moldes Sebastián, a physics student from the University of Valencia.

My personal interests in physics has always been around maths. The most mathematically complex subject has always been my favourite one, so it is easy to understand that when I came across quantum physics I instantly got amazed. The same happened when I read for the first time about quantum information. I chose all my electives in the last semester around quantum physics, I studied quantum field theory and quantum optics and I realised that I wanted to dedicate my whole life to it. The MSc in Quantum Science and Technology is a perfect fit for me, because I would have the chance to apply all these maths and theories into real technology.

But with no doubt what really makes me want to study quantum technologies right now is my final degree project. It's called 'Simulation of neutrino oscillations on a quantum computer'. In this project I first make the theoretical analysis of the 2-flavour and 3-flavour neutrino probability oscillation and then think of a circuit to calculate this probabilities in different times. I then implement this circuit on an IBM quantum computer using Qiskit and run it to get the results. I also calculate the mode-entanglement of these systems theoretically and with the quantum computer. It's feeling amazing to finally do science and come up with my own ideas. This was exactly what I needed to decide that I wanted to dedicate my professional life to quantum technology.

I am also very interested in joining one of your research groups on one of the fellowships that you offer. I think I could learn a lot, as I am very motivated to it, and also help as much as I can.

I foresee a bright future for quantum technologies for the next years and I want to contribute to it.

An other thing that made me want to study this master is to live in the city of Barcelona. Almost all valencian-speaking people are in love with catalan, and I am no exception, and the city is incredibly filled with culture so it becomes the perfect place for me. One of my wishes was to continue my studies there, but I never saw a masters program that suited me since now, that it is offered the one that I was looking for in all Europe!

With kind regards,
Alberto E. Rodríguez-Moldes Sebastián

