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## Motivation Letter

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### **In reference to the Master's Degree of Quantum Science and Technology.**

Since 2017 I have lived in Barcelona where I study Theoretical Physics at the University of Barcelona, although part of my university education was at the Instituto Tecnológico de Monterrey, in Mexico City where I studied Industrial Engineering and Systems for 2 years.

Starting with a Bachelor's degree in engineering, I discovered what I really liked: I was curious with the "why" and engineering didn't provide me with that answer. That's when I decided to move back to Barcelona to pursue my passion. Since then, every passing year has made me more aware of what I want to do, namely research in new technologies. We have reached a limit, we can't make chips smaller and faster because of their very nature, and that is where quantum technology comes into play. Harnessing quantum properties can help us leap forward and advance into a new era which would be impossible to achieve with classical systems.

In my final degree project, I've been studying the properties and responses of magnetic materials under the influence of a magnetic field and surface acoustic waves. I've visualized and analyzed how a magnetic material absorbs the amplitude of the wave depending on the resonance frequency. This has sparked my interest in quantum materials and how we can control and modify this type of behavior so that it can be developed into new technologies.

I think the joint effort of this Master's Degree will provide new insights in the pursuit of this technology and position Spain on the map. If possible, I would like to undertake the Master's Thesis with the Quantum Computing Technology group in the *Construction of the first superconducting quantum bit in Barcelona, its control electronics and its interface* at IFAE and be able to contribute and acquire experience that would help me position myself on track for a Doctoral or employment position.

I would like to have the opportunity to express my passion in this field and I think the best way to start is with the Master's Degree of Quantum Science and Technology specializing in Quantum Hardware.

Thank you for your time.

Sincerely,

Marc Rovirola