

Barcelona, April 2021

Addressed to: admission committee of the Master in Quantum Science and technology

During these 4 years that I've been studying the Physics degree in the University of Barcelona, I have been analysing which are my strengths and my weaknesses, as well as what I was more interested in. Since the third year until now (my last year), I have realized that quantum mechanics are used in almost every major subject in physics. Subjects such as "Computational physics", "Quantum Mechanics", "Classical and Quantum Information Theory", "Nuclear and Particle Physics" or "Atomic Physics and Radiation" led me to the conclusion that, undoubtedly, I would like to expand my knowledge towards this discipline (quantum mechanics). That is both because all the conceptual and physical implications that it has on our direct perception of reality and also because of the formalism which is used to work on them (essentially, quantum mechanics formalism). Therefore, I want my knowledge about this fascinating subject to keep growing beyond what is taught in the physics degree. Furthermore, I find interesting how all of this can be directly applied towards the new technologies (we have been slightly introduced to this topic in subjects such as "Classical and Quantum Information Theory", "Solid State Physics" and "Electronic Physics"). So, the different tracks that this master offers ("Quantum Software", "Quantum Hardware" and "Quantum Optics"), apart from the one that's more focused on theoretical studies, "Quantum Theory", catch my eye, all of them.

That's the reason why I think that a Master's programme such as this one offers me an opportunity that I can't let go if I want to satisfy all my intellectual desires and, at the same time, train and be ready by the time I enter the professional world. When this time comes, I would like to be specialized in one of my passions, and this master's degree is a way to achieve that goal. In addition to all of this, the wide range of collaborating institutions that offer internships, is a point that I also find very convenient for the "training" I am looking for. In this way, based on what my interests are so far, I really would like to be able to work (either via internship or via doing my master thesis) with some of them. Some research groups capture my attention: for instance, from the UB (topics related to particle physics, quantum theory of information or similar), or from the UAB (applications of quantum theory of information with "Quantum Information Group", for example). Moreover, I find also quite interesting the projects related to quantum computation and supercomputation that can be proposed by IFAE (with the "Quantum Computing Technology Group") or by BSC (with the "Quantum Algorithms Group").

As I think I transmitted in these previous paragraphs, I do not lack motivation to be part of the group which will be the class of students to be selected for this master's degree on its first year of existence. During these 4 years that I have been coursing the Physics degree, I had some moments when my motivation was quite low (mostly in some moments of the first 2 years). However, as you can imagine from all my statements, since I started my third year until now, I've been working hard in order to learn as much as possible because I found almost all the subjects really amusing and fascinating, so they were related to quantum mechanics in one way or another.

Finally, I would like to add something about my English level. Currently (while I am writing this statement of interest) my official English level is B2, but I intend to improve it and get the official C1 (Advanced) level soon (if possible, before the lectures start).

I would like to thank the admission committee for dedicating their time to consider my profile as a possible candidate.

Best regards, Pol Alsina Bolívar