MOTIVATION LETTER

Dear Sir/Madam

ABOUT ME

My name is Gastón Emanuel Cisterna. I am a Nuclear Engineer with a combined Bachelor's and Master's degree from Instituto Balseiro [1], one of the most prestigious academic institutions in Argentina and Latin America. My training has provided me with a broad and comprehensive foundation in nuclear technology, including Instrumentation and Control, Nuclear Safety, Neutron Physics, Reactor Physics, Thermal Hydraulics, and Nuclear Materials and Fuels. During my studies, I gained hands-on experience with the RA-6 [2] research reactor and conducted a final project on the design and performance of cold neutron guides for SANS instruments at the Argentine Laboratory of Neutron Beams (LAHN) [3], part of the new RA-10 reactor. Additionally, I pursued an Erasmus Mundus Joint Master Degree in Nuclear Physics (NucPhys) [4], a two-year program across Italy, France, and Spain, where I specialized in quantum mechanics and nuclear applications. My master's thesis focused on GN-Vision [5], a dual neutron-gamma radiation imaging device with applications in hadrontherapy, and nuclear reactor waste treatment, further advancing my expertise in innovative detector technologies.

WHY THIS Phd?

During my years of academic training, I discovered that, due to the multidisciplinary nature of applications in nuclear science, there are numerous fields of study within each nuclear specialty. Each one contributes to the efforts required for complex and challenging solutions that significantly impact humanity's future by providing safe, large-scale, and carbon-free energy. The focus of PSI on advancing Small Modular Reactors (SMRs) and molten salt reactor concepts makes it an ideal place for me to contribute meaningfully. SMRs, with their innovative approach to modular construction and enhanced safety features, represent a pivotal step in making nuclear energy more accessible and sustainable. Working at PSI would provide me the opportunity to delve into the critical research needed to make these reactors a practical solution for global energy challenges, aligning perfectly with my professional aspirations. Therefore, I am eager to expand the horizons of my knowledge in the field of nuclear energy to improve my professional capabilities and contribute my efforts to these technological advancements.

Moreover, living an international experience is one of my most important goals. In addition to the countless cultural benefits that this experience entails, PSI offers the opportunity to live it within an academic and educational context. I consider the possibility of building friendships while also establishing professional connections as one of the most enriching advantages this program offers, fostering both personal and professional growth. I am eager to embrace the multicultural exchange, to learn as much as possible from it, and to share my country's culture with those interested in discovering it.

WHY ME?

I consider myself a disciplined individual. Small, simple tasks done correctly day after day have enabled me to achieve significant personal goals. Over the years, I have learned—perhaps empirically and from an early stage—that my focus should always be on processes rather than results. Furthermore, I have understood that the result is merely the expression of a well-executed process. With this mindset, I have approached every project in my life, whether simple or complex, ranging from hobbies or personal interests to academic endeavors. I understand that poor results are sometimes part of life, but I am committed to always putting forth my best effort in everything within my control. This way of being has brought me many positive results, and I believe it is the key to tackling a project like this. At least, this is how I plan to approach it. This is how I am and how I have always been.

From an early age, I have been drawn to the field of nuclear energy, captivated by its potential to provide innovative and sustainable solutions to global challenges. This passion led me to pursue Nuclear Engineering, where I had the privilege of working with the RA-6 reactor, gaining invaluable practical experience. Eager to expand my knowledge, I enrolled in the Erasmus Mundus Joint Master Degree in Nuclear Physics, which allowed me to specialize in nuclear physics across leading institutions in Europe. Currently, I work as a researcher at the Instituto de Física Corpuscular (IFIC) in Valencia, Spain, where I focus on developing neutron detectors for medical applications. While this work has been incredibly fulfilling, my core interest remains in nuclear reactors and their fuel cycles, aligning perfectly with the objectives of this PhD position.

MY GOALS

My ultimate goal is to contribute to the advancement of nuclear energy as a sustainable and carbon-free solution to the world's energy challenges. Through this PhD program, I aim to deepen my expertise in advanced nuclear fuel cycles, reactor design, and safety. I am particularly motivated to explore the role of molten salt reactors in achieving sustainability and proliferation resistance. Joining PSI would provide me with the unique opportunity to work on cutting-edge research that aligns with my aspirations while enabling me to grow both personally and professionally. I am determined to bring my skills, dedication, and passion to this program and to contribute meaningfully to its success.

Thank you for considering my application. I look forward to the possibility of discussing how my background and experience align with the objectives of this PhD position.

[1] https://www.ib.edu.ar/academicas/carreras-de-grado/ing-nuclear
[2] https://www.argentina.gob.ar/cnea/Tecnologia-nuclear/reactores-de-investigacion/ra-6
[3] https://www.argentina.gob.ar/ra-10-multipurpose-reactor
[4] https://www.emm-nucphys.eu/
[5] https://indico.ific.uv.es/event/7664/contributions/25506/