Research Visit Report

PIANOFORTE Travel Grant for Early Career Researchers

1. Introduction

As a postdoctoral researcher at the University of Granada (UGR), my work focuses on the development of advanced technologies for Boron Neutron Capture Therapy (BNCT), an emerging radiotherapy approach with potential for highly selective tumour treatment.

In this context, I carried out a research stay at LPSC, France, in collaboration with the Accelerator-Based BNCT group. The main objective was to experimentally assess a neutron-production target prototype developed at the UGR for accelerator-based BNCT systems. The implementation of this experiment required high-power irradiation facilities that are not currently available at any national centre in Spain. In this regard, LPSC represents one of the leading European infrastructures for this type of experimental validation, making it the ideal laboratory for the proposed work.

2. Experimental Activity at LPSC

During the stay, I participated in the high-power particle beam irradiation and experimental characterisation of the prototype, assessing its thermal response, energy dissipation structural integrity, and cooling performance.

The experiments provided valuable information on its behaviour under irradiation and allowed comparison with previous Monte Carlo particle transport simulations and thermo-mechanical models. They also identified aspects requiring further optimisation, establishing a basis for subsequent experimental validation and neutron beam characterisation.

3. Skills and Experience Gained

This research stay allowed me to gain hands-on experience in high-power particle irradiation experiments and strengthen my knowledge of experimental techniques relevant to BNCT and radiation protection. Working alongside the host research group was a valuable opportunity to exchange expertise, strengthen international collaborations, and develop my ability to address experimental challenges. Overall, this experience represents an important step in my personal and professional development and in the continued advancement of BNCT research at the University of Granada.

I would like to express my sincere gratitude to PIANOFORTE for its partial financial support, which contributed to making this research visit possible, and to the entire host research group for their warm welcome, support, and collaboration throughout the stay.

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