

FRINGE Project Overview *

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FRINGE is a research and innovation action funded under H2020-FETOPEN program that is focused on the development of a genuinely new hybrid-technology for cancer therapy [1]. FRINGE aims to combine the advantages of both photo-medical and neutron-based therapies to achieve high tumor treatment efficiency, as well as large penetration depth in tissue. In the framework of FRINGE, proof of principle experiments are performed by using accelerator and reactor based neutron sources, in Greece and abroad, in order to cover a wide neutron energy range. Neutron irradiations are performed at the NEUTRA and ICON instruments at the Swiss Spallation Neutron Source (SINQ) of Paul Scherrer Institut (PSI) in Switzerland, at the HK1 thermal neutron line at the LVR-15 reactor in Řež, Czech Republic, as well as at the Tandem Accelerator Laboratory, in Athens, Greece. In this work, an overview of the FRINGE experiments will be presented, along with neutronics calculations with the MCNP code that were carried out in order to optimize the experimental set-ups and to theoretically interpret the results.

* The FRINGE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 828922.

[1] <https://www.fringe-fetopen.eu/>