

The FLASHMOD project –Hydrogen peroxide formation: UHDR vs CONV

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In this work the formation of hydrogen peroxide (H_2O_2) is measured after irradiation of ultrapure water with the ARRONAX proton beam under Ultra-High-Dose-Rate (UHDR) conditions and compared to conventional mode. A FLASH Effect was observed under Air in UHDR conditions attributed to the reaction of aqueous electrons e_{aq} with the precursors of H_2O_2 formation. In order to investigate this hypothesis, irradiations under Argon gas and with solutions saturated with nitrous oxide (N_2O) as an effective scavenger of the aqueous electron e_{aq} are proposed. H_2O_2 G-values obtained are used as experimental data to compare with Geant4-DNA (under development) Monte-Carlo simulations of water radiolysis under UHDR conditions in the FLASHMOD project.

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Classification de Session: Pôle Effets des Irradiations sur le Vivant