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Approach to Radiation, its Effects and its Testing in Fusion Reactors Experimental Areas

Thursday, 10 December 2020 09:00 (30 minutes)

The main scope of this presentation is the test of SEEs induced by neutrons on electronics intended to be operated in a neutron flux in a fusion reactor (DT plasma neutrons).
Regardless of the intensity of the gamma and neutron fluxes, this presentation focuses on the energy spectra of neutrons, whose energy degradation can vary from one place to another in the reactor building depending on the elastic and inelastic interactions of neutrons with the surrounding structures, such as shields and walls. Although the neutron fluxes depend on the design of the machine and the building as well as the operation of the reactor, the energy spectra of the neutrons should be quite similar for all fusion reactors. This property very specific to fusion experiments, whatever the scale of the machine, prompts the development of a common methodology for the measurement of SEEs induced by neutrons on the electronics of fusion machines. Analogies with the natural atmospheric spectrum can be evoked.

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