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Radiation shielding design for a neutron radiography facility at a research reactor

Content

A modern neutron radiography (NRAD) facility may utilise a beam with a neutron fluence rate as high as 1E9 cmˆ-2 sˆ-1. This necessitates the design of an adequate radiation shielding structure, usually a chamber, i.e. a complete enclosure. Shielding materials with good dose attenuation performance and affordability must be selected. This presentation deals with the radioation shielding design of an upgraded and redesigned NRAD facility at a research reactor. The design-basis beam is specified as having a neutron fluence rate of 1E9 cmˆ-2 sˆ-1 and a radius of circa 24 cm. An MCNP6 model of the research reactor was used to calculate the neutron and photon energy spectra of the beam. A second calculation model of the expanded and aligned circular beam entering the NRAD shielded chamber, was used to beam

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Radiation shielding design for a neutron radiography facility at a research reactor

Primary author: VAN ROOYEN, Johann (North-West University)

Presenter: VAN ROOYEN, Johann (North-West University)

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