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加速器驱动的次临界系统质子束管产生的辐射剂量

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摘要 利用MCNP程序,根据IAEA提供的ADS— —NEUTRONICBENCHMARK中的模型和数据,对加速器驱动的次临界系统质子束管中中子和光子泄漏产生的辐射进行了计算。通过计算与分析可知:有较大份额的中子和光子直接从质子束管中泄漏出去,且泄漏的中子和光子的能量相当高;在质子束管周围的辐射剂量有80%以上是由于质子束管中中子和光子辐射产生的,只有相当少的辐射剂量来自堆本身。

关键词 MCNP程序 加速器驱动的次临界系统 质子束管 泄漏辐射剂量

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Radiation Dose on Accelerator-driven Sub-critical System Proton Tube

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Abstract According to ADS— NEUTRONIC BENCHMARK data and model offered by IAEA, the radiation dose produced by the leakage of the neutrons and the photons in the ADS'(accelerator-driven sub-critical system) proton tube were calculated with the MCNP program. The fluxes of the neutrons and the photons which directly leak out from the proton tube are large and the energy is high; the above 80% radiation dose around the proton tube at the reactor outside comes from the radiation of the neutrons and the photons in the proton tube, only a small fraction that from the reactor. A special study on the radiation shield of proton tube in ADS is essential.

Key words MCNP program accelerator-driven sub-critical system proton tube leakage radiation dose

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