

物理

裂变缓发 γ 射线能谱的蒙特卡罗模拟

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收稿日期 2006-10-30 修回日期 2007-2-19 网络版发布日期: 2008-4-20

摘要 采用递次衰变路径搜索和遍历的递归算法编制一程序, 该程序可用于计算裂变核素在中子辐照时和辐照后任意1种或1组裂变产物在任意时刻的放射性活度、 γ 能谱及其随时间的变化。计算了²³⁹Pu在池式堆快中子照射下的裂变缓发 γ 能谱。用MCNP 软件模拟了高纯锗探头对裂变缓发 γ 射线的能谱响应。模拟结果可用于指导核材料裂变产额测量等研究工作。

关键词 [裂变缓发 \$\gamma\$ 射线](#); [蒙特卡罗模拟](#); [高纯锗探测器](#)

分类号 [0571](#)

Monte-Carlo Simulation of Energy Spectrum of Delayed Fission γ -ray

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Abstract A computer code using recursive algorithm searching the paths of the decay chains was written to calculate the activity and the energy spectra at any time of one or one group of fission products from a sample of fissile nuclides irradiated by neutrons. The fission delayed gamma spectra of ²³⁹Pu irradiated by pool reactor neutrons were calculated. The MCNP code was used to simulate the energy responses of HPGe detector to fission delayed gamma rays. The results of the simulation and calculation can be used as a guide to the measurements of fissile yields of nuclear materials and other relative research works.

Key words [delayed](#) [fission](#) [gamma](#) [rays](#) [_](#) [Monte-Carlo](#) [simulation](#) [_](#) [HPGe](#) [detector](#)

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