技术及应用

基于模糊c均值聚类的液体闪烁体探测器n-**γ**射线甄别方法

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摘要   提出一种基于模糊c均值聚类的液体闪烁体探测器n-γ射线甄别方法。使用便携式实时n-γ射线甄别器在环境中采集中子和γ射线，分别运用模糊c均值聚类和脉冲梯度法进行n-γ射线甄别，并将二者的结果进行比较。实验结果表明，基于模糊c均值聚类的n-γ射线甄别方法取得了与脉冲梯度法相近的结果，同时降低了不确定度，提高了甄别性能。

关键词   液体闪烁体探测器   n-γ射线甄别   模糊c均值聚类   脉冲梯度法
分类号

Discrimination of Neutrons and **γ**-rays in Liquid Scintillators Based on Fuzzy c-Means Clustering

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Abstract A novel method based on fuzzy c-means （FCM） clustering for the discrimination of neutrons and γ-rays in liquid scintillators was presented. The neutrons and γ-rays in the environment were firstly acquired by the portable real-time n-γ discriminator and then discriminated using fuzzy c-means clustering and pulse gradient analysis, respectively. By comparing the results with each other, it is shown that the discrimination results of the fuzzy c-means clustering are consistent with those of the pulse gradient analysis. The decrease in uncertainty and the improvement in discrimination performance of the fuzzy c-means clustering were also observed.

Key words liquid-scintillators   neutrons/γ-rays   discrimination   fuzzy c-means   clustering   pulse   gradient   analysis

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