

物理

## 反符合法测量<sup>152</sup>Eu放射性溶液的活度

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**摘要** <sup>152</sup>Eu的衰变纲图复杂, 包括72.1%的EC衰变和27.9%的β-衰变, 衰变子体退激过程中又放出140多条γ射线, 其中, 12条能量处在122~1 408 keV之间, 是主要γ射线。<sup>152</sup>Eu常用于HPGe γ谱仪能量校准和效率校准等, <sup>152</sup>Eu的放射性活度准确测量极为重要。本工作利用4πβ(PPC)-γ(HPGe)反符合测量装置对<sup>152</sup>Eu的活度进行绝对测量, 并与4πβ-4πγ符合效率外推法和HPGe γ谱仪、4πγ高气压电离室测量的结果进行了比较。这几种方法的测量结果在不确定度范围内一致。

**关键词** [4πβ\(PPC\)-γ\(HPGe\)反符合法](#) [<sup>152</sup>Eu](#) [活度](#)

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## Activity Standardization of <sup>152</sup>Eu by Anti-coincidence Method

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**Abstract** <sup>152</sup>Eu has a complex decay scheme, which decays 27.9% by β-emission and 72.1% by electron capture. The nuclide emits more than 140 γ-rays which include 12 main γ-rays in the range of 122-1 408 keV. <sup>152</sup>Eu is an important radionuclide for the energy and efficiency calibration of the HPGe gamma-spectrometers. It is very important to study the absolute measurement methods of the activity. A solution of <sup>152</sup>Eu was absolutely standardized by the 4πβ(PPC)-γ(HPGe) anti-coincidence counting system and the results were compared with that by 4πβ-4πγ coincidence counting efficiency extrapolation, HPGe gamma-spectrometer and 4πγ high pressurized ionization chamber. It is shown that all the results from the above methods are in good agreements within the uncertainties.

**Key words** [4πβ\(PPC\)-γ\(HPGe\)](#) [anti-coincidence](#) [<sup>152</sup>Eu](#) [activity](#)

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