

技术及应用

就地γ谱仪峰谷比法测量¹³⁷Cs深度分布

冯天成¹; 贾明雁¹; 冯元举¹; 苏川英¹; 吴睿¹; 陈伟¹; 龙斌¹; 程建平²

1.西北核技术研究所, 陕西 西安710024 2.清华大学 工程物理系, 北京100084

收稿日期 修回日期 网络版发布日期:

摘要 研究就地γ谱仪测量地表层¹³⁷Cs深度分布的峰谷比法, 建立了就地γ能谱峰谷比数值计算公式和实验剥谱方法。理论计算表明, 峰谷比随¹³⁷Cs张弛深度的变化十分灵敏, 土壤密度误差对峰谷比有一定影响, 但变化不大时, 对峰谷比法结果影响可忽略。野外验证实验显示, 峰谷比法相对于样品实验室分析结果的最大相对偏差为31%, 表明峰谷比法是可行的, 所建立数值计算公式、实验剥谱方法是正确的。

关键词 [就地γ谱仪](#) [¹³⁷Cs](#) [深度分布](#) [峰谷比法](#)

分类号

Peak-to-Valley Ratio Method to Determine Depth Distribution of ¹³⁷Cs in Soil by *In-Situ* γ Spectrometry

FENG Tian-cheng¹; JIA Ming-yan¹; FENG Yuan-ju¹; SU Chuan-yi ng¹; WU Rui ¹; CHEN Wei ¹; LONG Bin¹; CHENG Jian-pi ng²

1. Northwest Institute of Nuclear Technology, Xi' an 710024, China; 2. Department of Engineering Physics, Tsinghua University, Beijing 100084, China

Abstract The peak-to-valley ratio (PVR) method was approached to determine the depth distribution of ¹³⁷Cs in soil by *in-situ* γ spectrometry. Theoretical calculations show that the variation of PVR is much sensitive with the dissimilarity of radioactive depth distribution, and the influence of soil density uncertainty to PVR is slight and can be neglected when the variation of soil density is within 10%. Field experiments were performed to justify the theories as correctnes. The results show that the maximum relative deviation of *in-situ* γ spectrometry is about 31% relative to the samples analysis in laboratory, which indicates that PVR method of *in-situ* γ spectrometry is correct for the determination of radioactive depth distribution in soil.

Key words [in-situ](#) [γ](#) [spectrometry](#) [137](#) [Cs](#) [depth](#) [distribution](#) [peak-to-valley](#) [ratio](#) [method](#)

DOI

扩展功能	
本文信息	
▶ Supporting info	
▶ [PDF全文](1927KB)	
▶ [HTML全文](0KB)	
▶ 参考文献	
服务与反馈	
▶ 把本文推荐给朋友	
相关信息	
▶ 本刊中 包含“就地γ谱仪”的 相关文章	
▶ 本文作者相关文章	
· 冯天成	
· 贾明雁	
· 冯元举	
· 苏川英	
· 吴睿	
· 陈伟	
· 龙斌	
· 程建平	