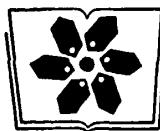


# 核技术

2011年8月



## 目 次

### 同步辐射技术及应用

软X射线光束线能量分辨率测量中气体压强对谱线的影响研究 ..... 薛超凡 王勇 吴衍青 许子健 邱仁忠 (561)

单壁碳纳米管吸附色氨酸的机理研究 ..... 周解平 唐军 徐彭寿 盛六四 潘国强 (565)

### 低能加速器技术、射线技术及应用

基于极大似然估计的 NaI(Tl)晶体仪器谱解析方法研究 ..... 张庆贤 葛良全 谷懿 曾国强 林延畅 等 (569)

基于 Geant4 的  $\gamma$ -CT 系统优化设计 ..... 苏吉 王化祥 薛倩 郝魁红 (575)

基于 Poisson Superfish 和 General Particle Tracer 的高亮度高平均功率电子枪设计 ..... 程坤 赵明华 顾强 林国强 (581)

$\gamma$  全谱法测定空气吸收剂量率的 M-C 法应用 ..... 张江云 黄宁 唐丽丽 刘艳芳 张光华 (585)

LaBr<sub>3</sub>(Ce)探测器对 MB 容器中气态  $\beta^+$  电子湮灭  $\gamma$  光子探测效率的数值计算 ..... 刘跃龙 屈国普 赵越 刘跃勇 (589)

用于测量放射性气溶胶  $\beta$  射线的 Phoswich 探测器的蒙特卡罗模拟 ..... 孙发力 夏晚彬 张志宏 吕晓雯 (594)

宽能谱高灵敏含硼塑料闪烁体探测器理论设计 ..... 吴茂嘉 何彬 欧阳晚平 陈亮 王冬 等 (599)

无源效率刻度方法的实验验证和分析 ..... 周程 王凤英 朱晓翔 (604)

时间关联符合法测量铀部件浓缩度 ..... 谢文雄 龚建 李建胜 黄坡 曾立恒 (609)

EAST 全超导托卡马克高分辨率 EUV 光谱仪诊断系统 ..... 张伟 石跃江 王秋平 沈永才 杜学维 等 (613)

氘氟化铀分子的结构及热力学稳定性 ..... 安民 何彬 左广霞 王安冬 吴茂嘉 (618)

### 核电子学与仪器

三维可视化在 <sup>60</sup>Co 集装箱 CT 检测系统中的设计与实现 ..... 章玺 刘金汇 (622)

高性能影像处理平台构建及显微 CT 图像重建算法的并行实现 ..... 丁喻 漆玉金 张雪竹 赵翠兰 (626)

### 核能技术

熔盐堆中氚的控制和监测 ..... 黄豫 刘卫 肖德涛 吴胜伟 曾友石 等 (632)

ITER 中子屏蔽层结构分析中二次应力去除 ..... 王开松 徐杨 宋云涛 王忠伟 (637)

# Nuclear Techniques

Vol.34 No.8

August 2011

## Contents

### SYNCHROTRON SCIENCE AND TECHNOLOGY

- Effect of gas pressure on energy resolution of the soft X-ray beamline ..... XUE Chaofan WANG Yong WU Yanqing XU Zijian TAI Renzhong (561)

- Mechanisms of tryptophan adsorption onto single-walled carbon nanotubes ..... ZHOU Jieping TAN Jun XU Pengshou SHENG Liusi PAN Guoqiang (565)

### LOW ENERGY ACCELERATOR AND RADIATION APPLICATIONS

- The unfolding of NaI(Tl)  $\gamma$ -ray spectrum based on maximum likelihood method ..... ZHANG Qingxian GE Liangquan GU Yi ZENG Guoqiang LIN Yanchang *et al* (569)

- Optimum design of  $\gamma$ -CT system based on Geant4 simulation for multiphase flow measurement ..... SU Ji WANG Huaxiang XUE Qian HAO Kuihong (575)

- Design of high-brightness and high-power electron gun based on combined Poisson Superfish and GPT ..... CHENG Kun ZHAO Minghua GUQiang LIN Guoqiang (581)

- Application of Monte Carlo method in determination of air absorbed dose rate from a full  $\gamma$ -ray spectrum ..... ZHANG Jiangyun HUANG Ning TANG Lili LIU Yanfang ZHANG Guanghua (585)

- Numerical calculation on efficiencies of LaBr<sub>3</sub>(Ce) detector for  $\gamma$ -rays produced by gaseous  $\beta^+$  positron annihilation in Marinelli beaker ..... LIU Yuelong<sup>1</sup> QU Guopu<sup>1</sup> ZHAO Yue<sup>1</sup> LIU Yueyong (589)

- M-C simulation of Phoswich detector for measuring  $\beta$ -rays in radioactive aerosol ..... SUN Fali XIA Xiaobin ZHANG Zhihong LV Xiaowen (594)

- Design of a high efficiency boron-loaded plastic scintillation detector for a wide spectrum of neutrons ..... WU Maojia HE Bin OUYANG Xiaoping CHEN Liang WANG Dong *et al* (599)

- Source-free efficiency calibration and verification of a  $\gamma$ -ray spectral system ..... ZHOU Cheng WANG Fengying ZHU Xiaoxiang (604)

- A time correlation coincidence method to measure uranium enrichment ..... XIE Wenxiong GONG Jian LI Jiansheng HUANG Po ZENG Liheng (609)

- High resolution EUV spectrometer diagnostic system on EAST ..... ZHANG Wei SHI YueJiang WANG Qiuping SHEN Yongcai DU Xuewei *et al* (613)

- Structure and thermodynamic stability of UD<sub>3</sub> and UT<sub>3</sub> molecules ..... AN Min HE Bin ZUO Guangxia WANG Andong WU Maojia (618)

### NUCLEAR ELECTRONICS AND INSTRUMENTATION

- 3D visualization design and implementation in <sup>60</sup>Co container CT inspection system ..... ZHANG Xi LIU Jinhui (622)

- A high performance image processing platform based on CPU-GPU heterogeneous cluster with parallel image reconstructions

- for micro-CT ..... DING Yu<sup>1,2</sup> QI Yujin<sup>1</sup> ZHANG Xuezhu<sup>1</sup> ZHAO Cuiyan (626)

### NUCLEAR ENGINEERING

- Control and monitoring of tritium in molten salt reactor ..... HUANG Yu LIU Wei XIAO Detao WU Shengwei ZENG Youshi *et al* (632)

- Removing the secondary stress in structure analysis of ITER in-wall shields ..... WANG Kaisong XU Yang SONG Yuntao WANG Zhongwei (637)