

# 强激光与粒子束

HIGH POWER LASER AND PARTICLE BEAMS

ISSN 1001-4322  
CN 51-1311/O4  
CODEN QYLIEL

第 32 卷  
第 4 期  
2 0 2 0

带电粒子加速器的基本类型及其技术实现

陈思富, 黄子平, 石金水



中国工程物理研究院  
中 国 核 学 会  
中 四 川 核 学 会  
主 办

加速器专题



万方数据

## 目 次

### 加速器专题

带电粒子加速器的基本类型及其技术实现.....	陈思富, 黄子平, 石金水	045101(17)
引张线技术在加速器准直测量中应用概述.....	袁建东	045102(10)
基于悬丝法的螺线管磁轴测量信号处理技术.....	江孝国, 杨兴林, 蒋薇, 等	045103(5)
绝缘环打火研究.....	夏连胜, 陈思富, 石金水	045104(4)
1.3 GHz 超导腔的掺氮实验 .....	董超, 沙鹏, 刘佰奇, 等	045105(4)
超导腔数字自激垂直测试系统.....	杨际森, 潘卫民, 王洪磊, 等	045106(6)
工作点反馈系统对同步辐射光源运行稳定性的提升 (英) .....	吴旭, 田顺强, 张庆磊, 等	045107(8)
质子治疗装置动态电源控制系统研发.....	李海荣, 蒋舸扬, 金林, 等	045108(6)

### 高功率激光与光学

激光雷达扫描方式.....	袁光福, 马晓燠, 刘爽, 等	041001(6)
双光子聚合多次快速扫描机制与小线宽研究.....	童唯扬, 王正岭	041002(6)

### ICF 与激光等离子体

皮秒短脉冲 X 射线背光诊断快点火靶丸压缩面密度 .....	毕碧, 周维民, 单连强, 等	042001(5)
--------------------------------	-----------------	-----------

### 高功率微波

Ka 波段同轴多注相对论速调管的电子束引入 .....	党智伟, 李士锋, 王战亮, 等	043001(6)
新型半矩形环螺旋线慢波结构高频特性.....	夏伟, 魏望和, 魏彦玉, 等	043002(5)

### 复杂电磁环境

半导体多物理效应并行计算程序 JEMS-CDS-Device 设计与实现 .....	李光荣, 赵振国, 王卫杰, 等	043201(8)
基于场路仿真的 PCIe 电磁干扰分析及优化设计 .....	杨会, 宋航, 肖夏	043202(7)

### 粒子束技术

不同顺序中子 / $\gamma$ 辐照对双极器件电流增益的影响 .....	王凯, 吕学阳, 吴锟霖, 等	044001(6)
--	-----------------	-----------

### 脉冲功率技术

纳秒脉冲下几种液态介质绝缘性能的比对.....	贾伟, 陈志强, 郭帆, 等	045001(6)
液电脉冲激波特性分析.....	吴敏干, 刘毅, 林福昌, 等	045002(7)

### 核科学与工程

HL-2M 装置 5 MW 中性束加热束线离子源放电室研制 .....	魏会领, 曹建勇, 余珮炫, 等	046001(5)
基于蒙卡模拟的分段 $\gamma$ 扫描无源效率刻度方法.....	郑洪龙, 度先国, 苟家元, 等	046002(7)

期刊基本参数 : CN 51-1311/O4 \* 1989 \* m \* A4 \* 136 \* zh+en \* P \* ¥100.00 \* 1000 \* 20 \* 2020-04

责任编辑 : 汪道友      英文编校 : 李天惠      责任校对 : 刘玉娜      封面设计 : 杨嘉炜

# HIGH POWER LASER AND PARTICLE BEAMS

Vol. 32 No. 4 Sum 274 Apr., 2020

## CONTENTS

### • Feature Issue on Accelerator •

Basic types and technological implementation of charged particle accelerators.....	Chen Sifu, Huang Ziping, Shi Jinshui	045101(17)
Summary of application of stretched wire technology in accelerator alignment and survey .....	Yuan Jiandong	045102(10)
Measurement signal processing technology for magnetic axis of solenoid based on pulsed tuat-wire method .....	Jiang Xiaoguo, Yang Xinglin, Jiang Wei, et al.	045103(5)
Research on vacuum flashover of insulator in induction cavity .....	Xia Liansheng, Chen Sifu, Shi Jinshui	045104(4)
Nitrogen doping experiment of 1.3 GHz superconducting cavity.....	Dong Chao, Sha Peng, Liu Baiqi, et al.	045105(4)
Digital self-excited vertical test system of superconducting cavity .....	Yang Jisen, Pan Weimin, Wang Honglei, et al.	045106(6)
Operation stability improvement for synchrotron light sources by tune feedback system .....	Wu Xu, Tian Shunqiang, Zhang Qinglei, et al.	045107(8)
Development of dynamic power control system in proton therapy facility .....	Li Hairong, Jiang Geyang, Jin Lin, et al.	045108(6)

### • High Power Laser and Optics •

Research on lidar scanning mode.....	Yuan Guangfu, Ma Xiaoyu, Liu Shuang, et al.	041001(6)
Linewidth of femtosecond laser two-photon polymerization multiple-rapid-scanning .....	Tong Weiyang, Wang Zhengling	041002(6)

### • ICF and Laser Plasma •

Density diagnosis based on ps-duration-pulse X-ray backlighting for fast ignition compression .....	Bi Bi, Zhou Weimin, Shan Lianqiang, et al.	042001(5)
---	--	-----------

### • High Power Microwave •

Electron beam introduction of Ka-band coaxial multi-beam relativistic klystron amplifier .....	Dang Zhiwei, Li Shifeng, Wang Zhanliang, et al.	043001(6)
High-frequency characteristics of half rectangular ring helix slow wave structure ...	Xia Wei, Wei Wanghe, Wei Yanyu, et al.	043002(5)

### • Complex Electromagnetic Environment •

Design and implementation of semiconductor multi-physical parallel computing program JEMS-CDS-Device.....	Li Guangrong, Zhao Zhenguo, Wang Weijie, et al.	043201(8)
PCIe electromagnetic interference analysis and optimization design based on co-simulation of field and circuit .....	Yang Hui, Song Hang, Xiao Xia	043202(7)

### • Particle Beams Technology •

Effects of different sequential neutron/gamma irradiation on current gain of bipolar devices .....	Wang Kai, Lü Xueyang, Wu Kunlin, et al.	044001(6)
--	---	-----------

### • Pulsed Power Technology •

Comparison of insulation properties of several liquid dielectrics under nanosecond pulses .....	Jia Wei, Chen Zhiqiang, Guo Fan, et al.	045001(6)
Characteristics analysis of electrohydraulic shockwave .....	Wu Min' gan, Liu Yi, Lin Fuchang, et al.	045002(7)

### • Nuclear Science and Engineering •

Development of ion source discharge chamber for the 5 MW neutral beam heating line on HL-2M device .....	Wei Huiling, Cao Jianyong, Yu Peixuan, et al.	046001(5)
A passive efficiency calibration method with Monte Carlo simulation in segmented gamma scanning .....	Zheng Honglong, Tuo Xianguo, Gou Jiayuan, et al.	046002(7)