

# 中期考核答辩

学生：赵荣    导师：王为

物理学院

粒子物理与原子核物理



中山大學  
SUN YAT-SEN UNIVERSITY

# Outline

① 个人简介

② 课程学习

③ 学术活动

④ 科研工作

⑤ 总结



# 自我介绍

- ① 2017 级博士生
- ② 专业：粒子物理与原子核物理
- ③ 导师：王为教授
- ④ 主要研究方向：江门中微子实验

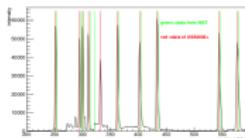
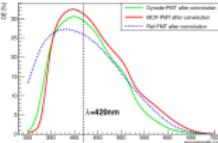
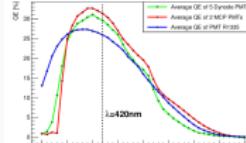
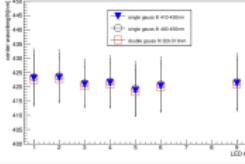
# 课程成绩

2017.09-2018.06 课程学习阶段：

课程	核电子学	高能物理数据分析	粒子物理	高能物理简介
成绩	94	94	93	90
课程	粒子物理与核物理 实验方法	第一外国语	中国马克思主义与当代	
成绩	85	84	83	

# 学术会议

- (2018.01 南京大学) 第 11 届江门中微子实验合作组会  
“LED 光谱分布和对 PMT 探测效率测量的影响”

LED Spectrum and Its impact to PMT's DE Measurement		Spectrometer and calibration	Measured spectra of mercury lamp								
<p>Rong Zhao mail: zbaer25@mail2.sysu.edu.cn SUN YAT-SEN UNIVERSITY January 22, 2018</p>  		<p><b>Spectrometer and calibration</b></p>  <p>Figure: mercury lamp for spectrometer calibration</p> <p>Table: parameters of mercury lamp</p> <table border="1"> <tr><td>model</td><td>zolix LHM254</td></tr> <tr><td>HV</td><td>1500V</td></tr> <tr><td>power</td><td>3w</td></tr> <tr><td>current</td><td>10mA</td></tr> </table> <p>Adjust the distance between lamp and spectrometer to acquire proper light intensity.</p> 	model	zolix LHM254	HV	1500V	power	3w	current	10mA	<p>The measured spectra using our spectrometer and data from NIST.</p>  <p>Figure: mercury lamp for spectrometer calibration</p>
model	zolix LHM254										
HV	1500V										
power	3w										
current	10mA										
Interpolation and convolution	QE v.s $\lambda$	LED spectrum									
MCP-PMT have QE=31.19@420nm. Dynode-PMT have QE=29.41@420nm. Ref-PMT have QE=25.83@420nm.	 <p>Figure: convolutioned QE-<math>\lambda</math> curve of MCP-PMT and Dynode-PMT</p>	 <p>measured QE wavelength response from IHEP and JINR, the wavelength interval is 10nm.</p> <p>Figure: convolutioned QE-<math>\lambda</math> curve of MCP-PMT and Dynode-PMT</p>	 <p>Figure: spectrum fitting results using different function</p>								

# 学术活动

- (2018.03 费米国家加速器实验室) Excellence in Detector and Instrumentation Technologies  
操作各种探测器以及分析数据, 获得卓越探测器完成奖



# 学术活动

- (2018.05 武汉大学) 江门中微子实验离线软件研讨会  
学习交流江门中微子实验的离线软件开发和使用

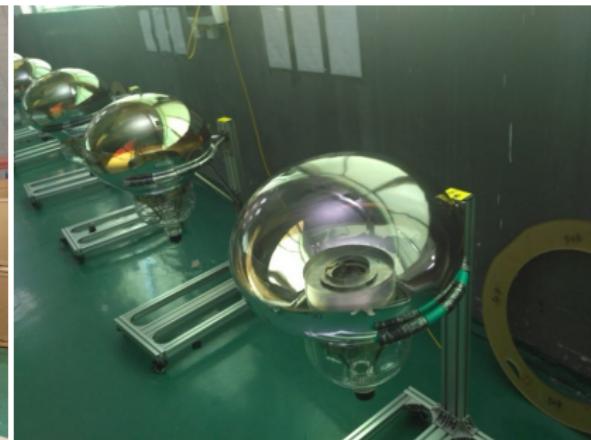


学术会议

- (2018.07 中国科学院高能物理研究所) 第 12 届江门中微子实验合作组会  
“PMT 测试数据分析和结果”

# 学术活动

- (2018.02 中山市) 江门中微子光电倍增管测试站  
光电倍增管批量测试值班

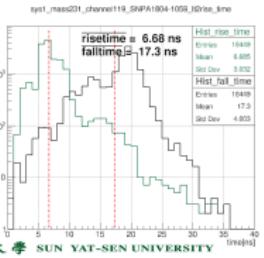
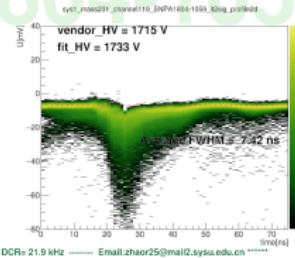
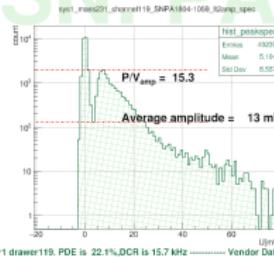
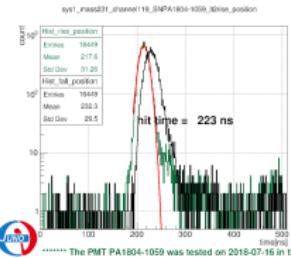
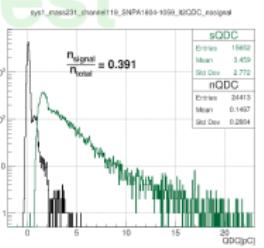
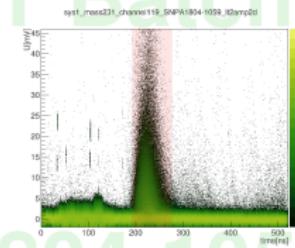
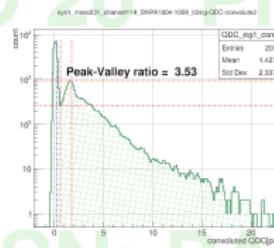
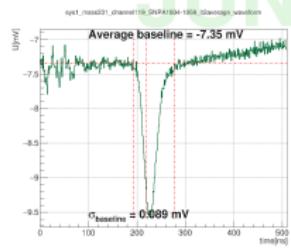
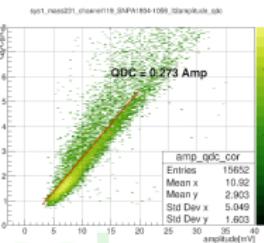
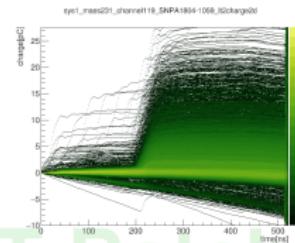
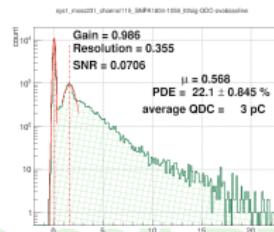
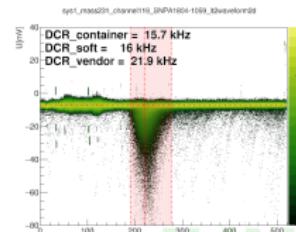


# 软件开发-光电倍增管批量测试数据分析软件

江门中微子实验需要测试大约 20000 只光电倍增管，获得每只探测器的工作参数。

- 
- 基于 C++ 和 ROOT 开发
  - 快速处理 PMT 测试原始数据
  - 提供详尽的测试结果分析和数据输出
  - 改进传统参数评估算法
  - 协助值班员快速查找解决硬件问题
  - 光电倍增管整体参数评估
-

# 软件开发-光电倍增管批量测试数据分析软件



Thank You