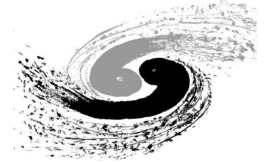


实验物理中心研究生考核报告

王泽炳
导师：陈明水
CMS课题组

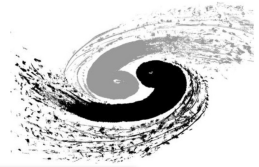


C O N T E N T

- Analysis Work
 - Search for Rare Higgs Boson Decay in Leptons + Photons Final State at 13 TeV
- Service Work
 - CSC Detector On Call Shifter
 - CSC Longevity Studies
- Summary



Search for Rare Higgs Boson Decay in Leptons + Photons Final State



- CADI: HIG-22-003
 - Contact person: Zebing Wang
- The analysis was preapproved by HIG group on July 12
 - The preapprove talk was given by me
- We are preparing unblinding now

Pre-approval of HIG-22-003: Search for exotic decay of the Higgs boson $H \rightarrow Z + ALPs \rightarrow 2l + 2\gamma$

Jul. 12, 2022

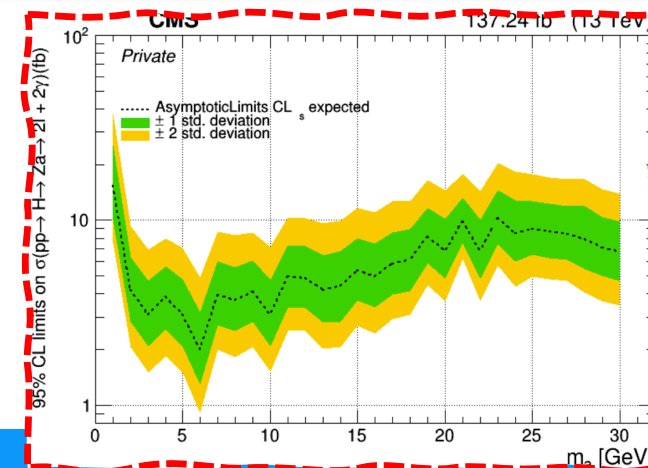
Zebing Wang^[1]
Mingshui Chen^[1]
Lucien Lo^[2]

[1] Institute of High Energy Physics, Chinese Academy of Sciences
[2] University of Florida



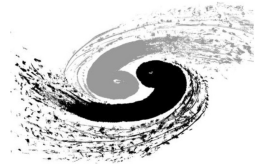
中国科学院高能物理研究所
Institute of High Energy Physics
Chinese Academy of Sciences

UF UNIVERSITY of FLORIDA

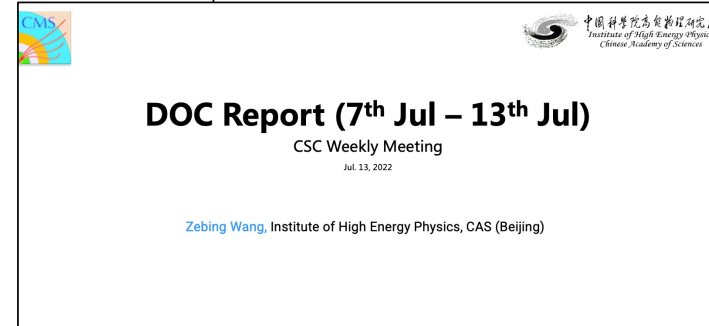
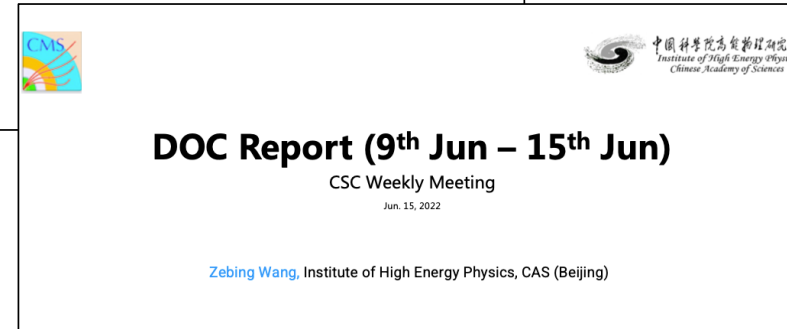
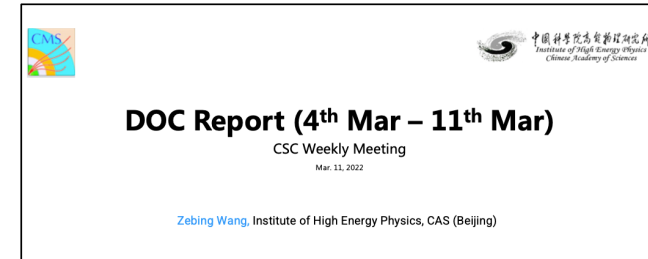
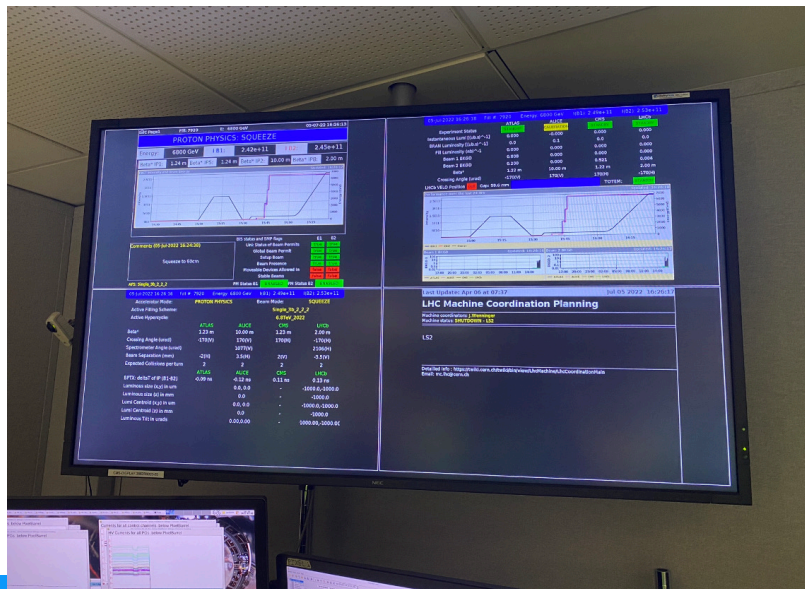




CSC Detector On Call (DOC) Shifter

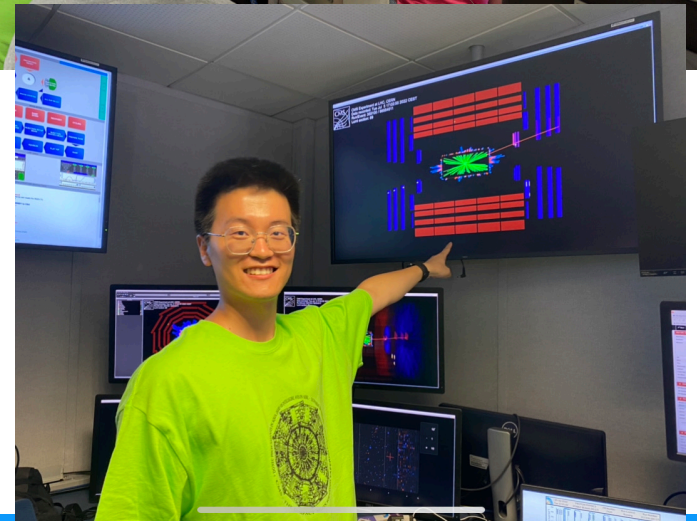
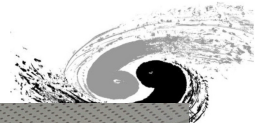


- I've been 3 weeks CSC DOC shifter:
 - Mar. 4 – Mar. 11
 - Jun. 9 – Jun. 15
 - Jul. 7 -- Jul. 13
- First collision of Run3.
 - LHC @ 13.6 TeV
 - July 5



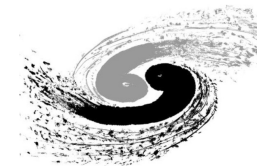


First Collision for Run 3





Goals of Longevity and Performance Studies



Assess longevity of CSCs with nominal gas for HL-LHC lifetime

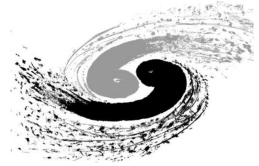
Find eco-friendlier modus operandi at HL-LHC

- With adequate performance
- With adequate longevity
- Option A: reduce amount of CF₄
- Option B: replace CF₄ with a “greener” gas

Auxiliary: study chamber/electronics performance at HL-LHC-like rates



CSC Longevity Study



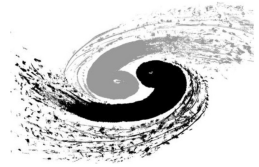
- One report in 2022 Summer Muon Week
 - On behalf our CSC group
 - [Link](#)



The screenshot shows a presentation slide titled "CMS-CSC Longevity and Ecogas Search" for the 2022 Summer Muon Week on June 23, 2022. The speaker is Zebing Wang from the Institute of High Energy Physics, CAS (Beijing), on behalf of the CMS CSC Group. Below the slide is a chat log snippet showing a message at 11:40: "CSC longevity and ecogas (15' + 5')", with the speaker identified as Zebing Wang (Chinese Academy of Sciences (CN)). A file named "CSC-longevity&eco..." is attached. A "Lunch Break" notification is visible at 12:00.



Summary

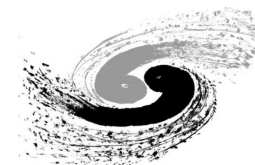


- For the analysis work
 - The analysis HIG-22-003 was preapproved
 - We are preparing unblinding now
- For the service work
 - 3 weeks CSC DOC shifter
 - Data taking for run3
 - CSC longevity study
 - One report in 2022 Muon Week

CMS
collaboration
June 2022



photo Michael.Hoch@cern.ch



Thanks!