

# 郑州大学参与WCD A 的相关工作及展望

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Zhengzhou University

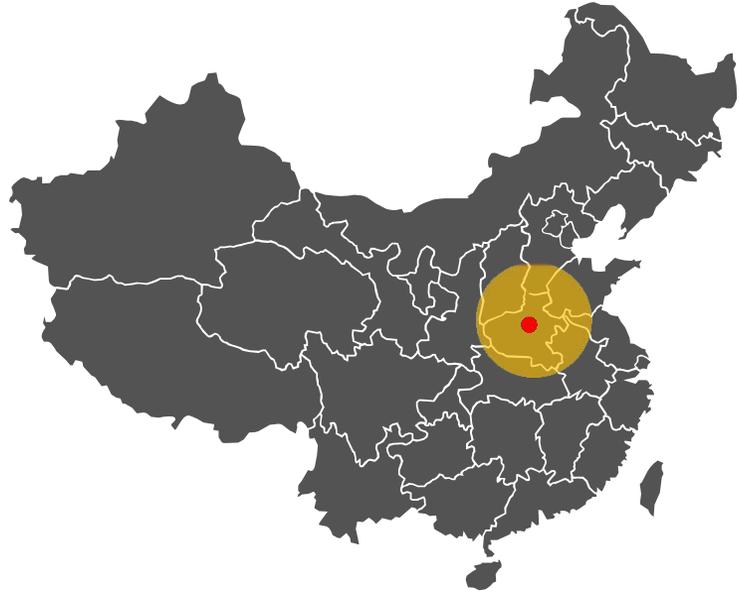
LHAASO collaboration meeting, Linzhi

Oct 8<sup>th</sup> ~ 12<sup>th</sup>, 2018

# Outline

- **Introduction of ZZU and related subjects**
- **ZZU's work on WCDA**
- **Near-term plan**

# the City & the University



## Zhengzhou City

- The capital of Henan province
- Center of 0.1 billion people and talents
- Advantageous geographical location and convenient transportation



## Zhengzhou University

- The largest university of China (undergraduates)
- On the list of “Double First-class” university project
- Making great progress and receiving great reputations

# School of Physics and Engineering

- **A large school**
  - 200 staffs, 1400 undergraduates, 400 postgraduates
- **Various research fields**
  - **Particle physics, nuclear physics, theoretical physics**
  - Condensed matter physics, material physics
  - Optical engineering
  - Electronics science and technology
  - Observation and control techniques
  - And so on.

# Particle Physics of ZZU

- **Theory & Phenomenology**

- Hadron physics
- Chiral effective theory
- Neutrino (T2K and MiniBooNE)

- **Techniques**

- Extensive Air Shower detector array
- High speed DAQ technology
- Pulse amplitude detection technology
- Slow control system

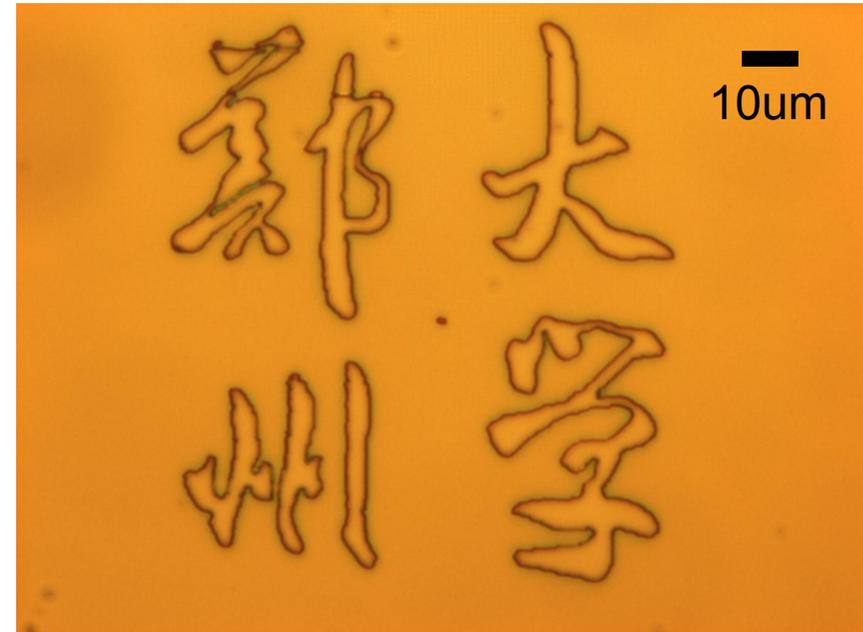
- **Collaborator of**

- BES III
- JUNO
- (LHC-CMS, RHIC-STAR)

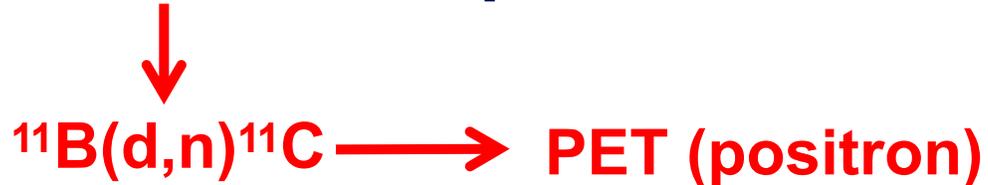
# Van de Graaff Accelerator



Proton Beam Writing  
beam size  $< 1\mu\text{m}$



4MeV **deuteron** or **proton**



# ZZU's Work on WCDA

- **Started at August, 2018**
- **Took part in**
  - PMT on site testing
  - Leak hunting
  - Pumping and cleaning
- **Participate in the current PMT installation**
- **Dedicate coding work**
- **Phenomenology study on the cosmic-ray air shower processes (uRQMD in Corsika ...)**

# New detector proposal: water background radiation detector

- main source of the BG radiation: radon
- motivation: in order to have **a better understanding of the BG**
- solution: 'standard'

PMT size (inch)	gain	testing environment	PMT total rate (kHz)
1.5	2E5	Beijing, dark	0.05
1.5	3E6	Beijing, dark	1~2
1.5	3E6	LHAASO, leak (light & water)	0.5~10
8	3E6	LHAASO, leak (light & water)	50
8	3E6	YBJ	50~70
20	3E6	Beijing, dark	10
20	3E6	LHAASO, leak (light & water)	5~200

*Data from HC Li & ZK Zeng*

# Manpower & Funding on LHAASO

- Early stage (1st year):
  - 2 staffs and 1 postdoc
- After settling down:
  - 1 Ph.D student / 1~2 years
  - graduates
  - more staffs

- Startup fund: ¥ 1,500,000
- Special funds if necessary

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**ZZU is looking forward to learning and working with LHASSO collaborators. Thanks !**