

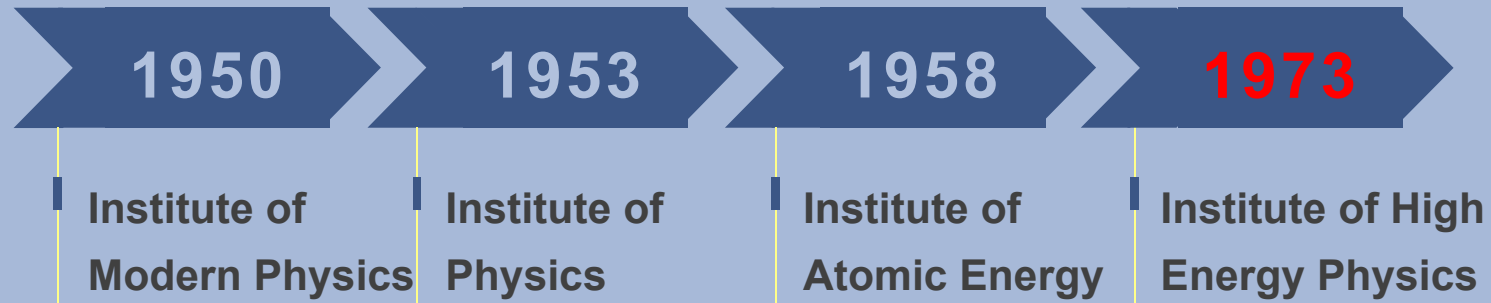
# Introduction to IHEP

*Yuhui Li*



*Institute of High Energy Physics  
Chinese Academy of Sciences*

# IHEP History



IHEP' real start is from the construction of Beijing Electron Position Collider (BEPC) in 80's, and now is a large and comprehensive center for HEP and multi-disciplinary research

## Frontiers of Basic Science

**Particle & Astroparticle Physics**

- Accelerator-based HEP Experiments
- Particle Astrophysics & Neutrino Experiments
- Particle Detection and Electronics
- Particle Physics Theory

## Strategic High-Tech

**Accelerator Physics and Technologies**

- High Luminosity Electron Accelerators
- High Intensity Proton Accelerators
- Applied Research and Technology Transfer

## Multi-disciplinary research

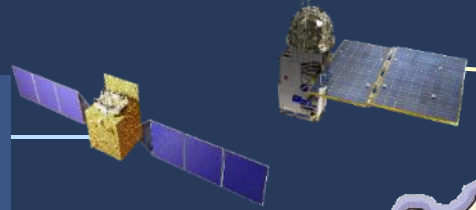
**Radiation Technologies and Applications**

- Synchrotron Radiation & Applications
- Neutron Scattering & Applications
- Nuclear Analytical Techniques & Applications

**1500 permanent staff, 220 postdocs, 700 students, 300 visiting students, ~¥3B/yr (€0.4B)**

# Large Science Facilities

**HXMT**  
Insight Hard X-ray Modulation Telescope

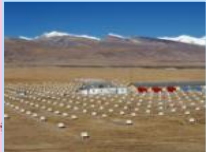


**GECAM**  
Gravitational wave EM Counterpart All-sky Monitor

**Huairou Campus**  
**HEPS** High Energy Photon Source



**YBJ (retired)**  
International Cosmic Ray Observatory



**IHEP, Beijing Campus**  
**BEPC** Beijing Electron-Positron Collider



**Jinan Campus**



**AliCPT**  
Ali CMB Polarization Telescope



**LHAASO**  
Large High-Altitude Air Shower Observatory



**Daya Bay (retired)**  
Daya Bay Reactor Neutrino Experiment



**JUNO**  
Jiangmen Underground Neutrino Observatory



**Dongguan Campus**  
**CSNS** China Spallation Neutron Source





# Campuses



IHEP Yuquan Campus, Beijing



Dongguan Campus, Guangdong Province



Jinan Campus, Shandong Province



Huairou Campus, Beijing



TIANFU Cosmic Ray Research Center, Chengdu, Sichuan



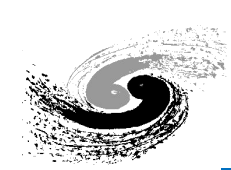
LHAASO measurement and control base, Daocheng, Sichuan



Juno Experiment Campus, Kaiping, Guangdong



AliCPT-1 Experiment Campus, Ali, Tibet



# Particle Physics – Experimental Physics Division<sup>6</sup>

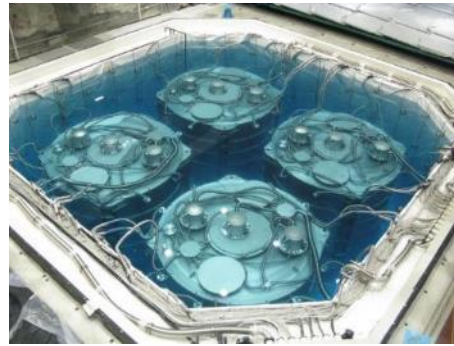
177 staff, 397 temporary (including postdoc, students), totaled 574 people

Complete chain of design, construction, and operation of large-scale experiments, R&D of advanced technology



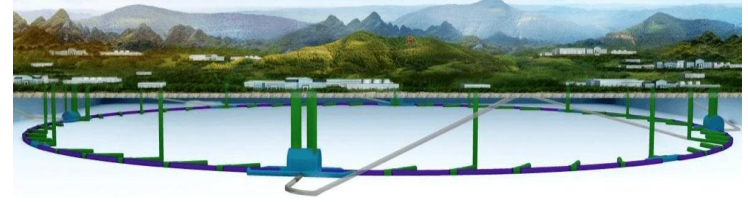
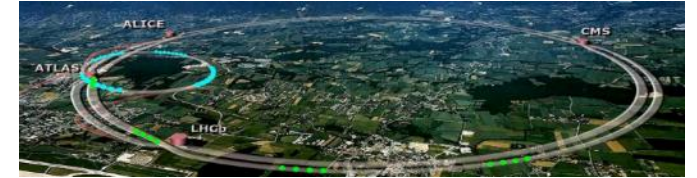
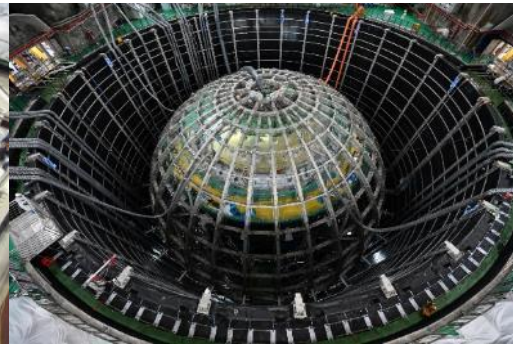
## Charm Physics

BESIII, BelleII, PANDA, GlueX



## Neutrino Physics

Daya Bay, JUNO, EXO, DarkSide, COMET



## High Energy Frontier

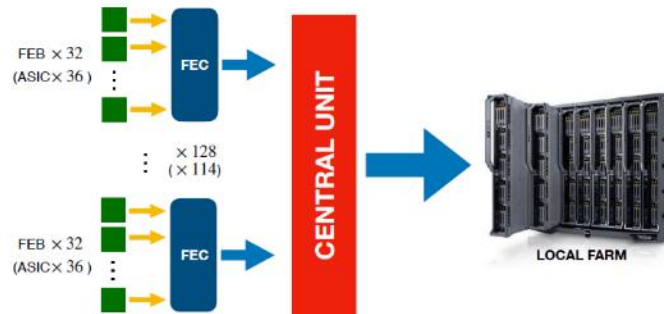
CEPC, LHC (ATLAS/CMS/LHCb)



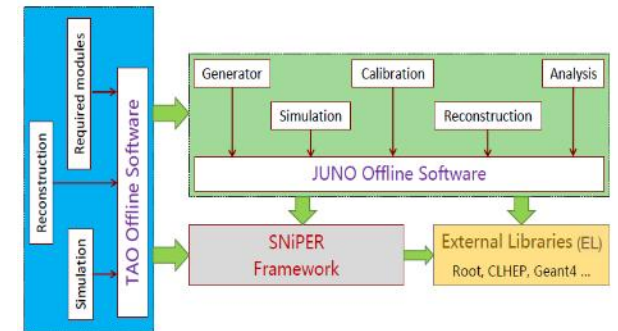
## Detector



## Electronics



## Trigger, DAQ, DCS



## Software

# Particle Astrophysics Division

**170 staff, 200 temporary**

- The origin of **cosmic rays**
- Extreme gravity and magnetic fields of **black holes/neutron stars**
- **Primordial gravitational waves** and cosmic expansion

Under development



About to launch



In operation



X-ray

Gamma-ray

UHE gamma-ray

Primordial gravitational waves  
(ultra-high energy scale)

Ali-CPT  
(microwave)

LACT  
(under development)





# Accelerator Technology – Accelerator Division

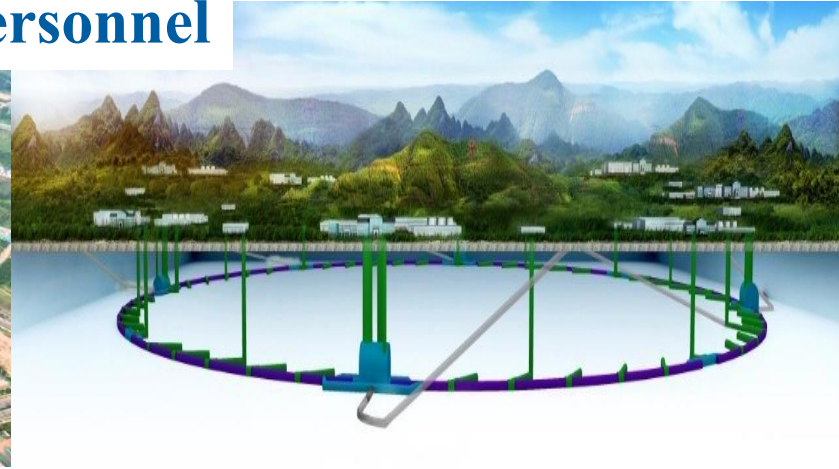
235 staff, 111 temporary, totaling 346 personnel



**BEPC**



**HEPS**

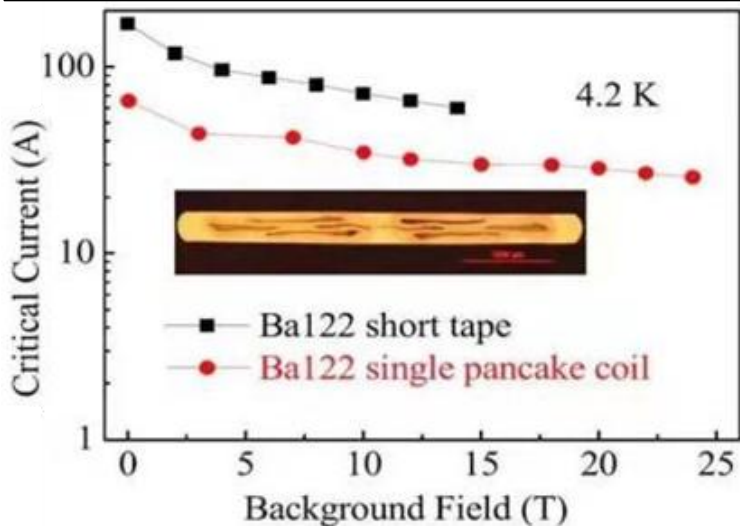


**CEPC**

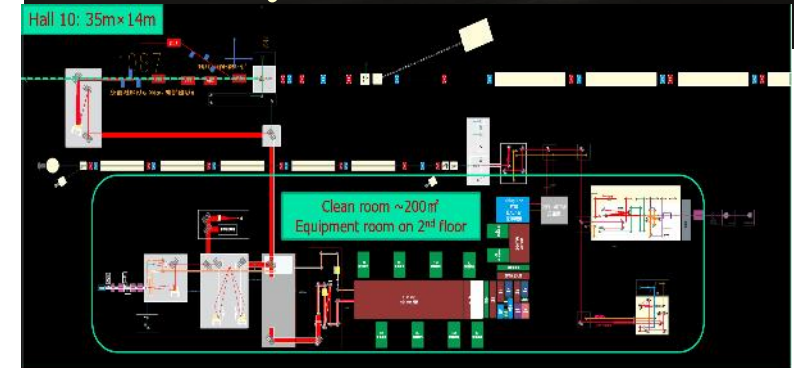


Accelerator key technology R&D platform

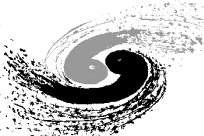
World first **Iron-based Superconducting solenoid coil at 24T**



Backup solution for CEPC linac  
**Wakefield Acc.**  
Test facility to be built at BEPCII





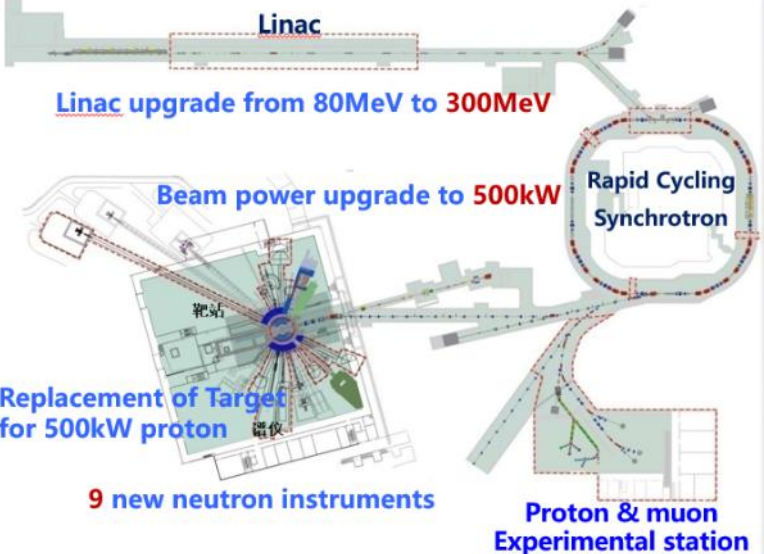
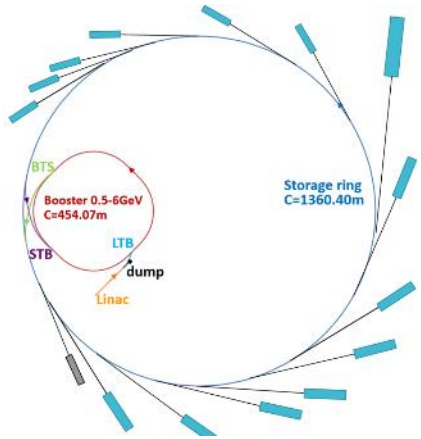


# Light Source, Neutron Source, Multi-Disciplinary

Multi-Disciplinary Division, 223 Staff, 289 Temporary



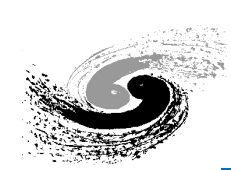
HEPS Beamline phase-I



- China Spallation Neutron Source (100 kw)
- Upgrading to CSNS-II (500 kw)
- Southern Advanced Photon Source



Dongguan Branch, 345 Staff, 179 Temporary



## ◆ Division of Nuclear Technology and Application (and Jinan Branch)

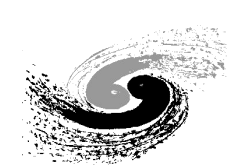
- ⇒ 58 staff, 47 temporary
- ⇒ Focus on instrumentation, engineering and system development
- ⇒ Nuclear medical imaging; Non-destructive testing (NDT); Radiation safety monitoring

## ◆ Theoretical Physics Division

- ⇒ 26 staff, 60 temporary. Has best students at IHEP.
- ⇒ One of the best theory groups in China
- ⇒ Hardon physics; LQCD; Neutrino; Higgs/TeV physics; Precision QCD+EW; Cosmology

## ◆ Computing Center

- ⇒ 44 staff, 39 temporary
- ⇒ 100k CPU cores, 100 PB disk storage, 100 PB tape storage
- ⇒ LHCb Tier-1 site, ATLAS and CMS Tier-2 sites
- ⇒ Advanced computing, storage, and network technology; software development; AI and QC



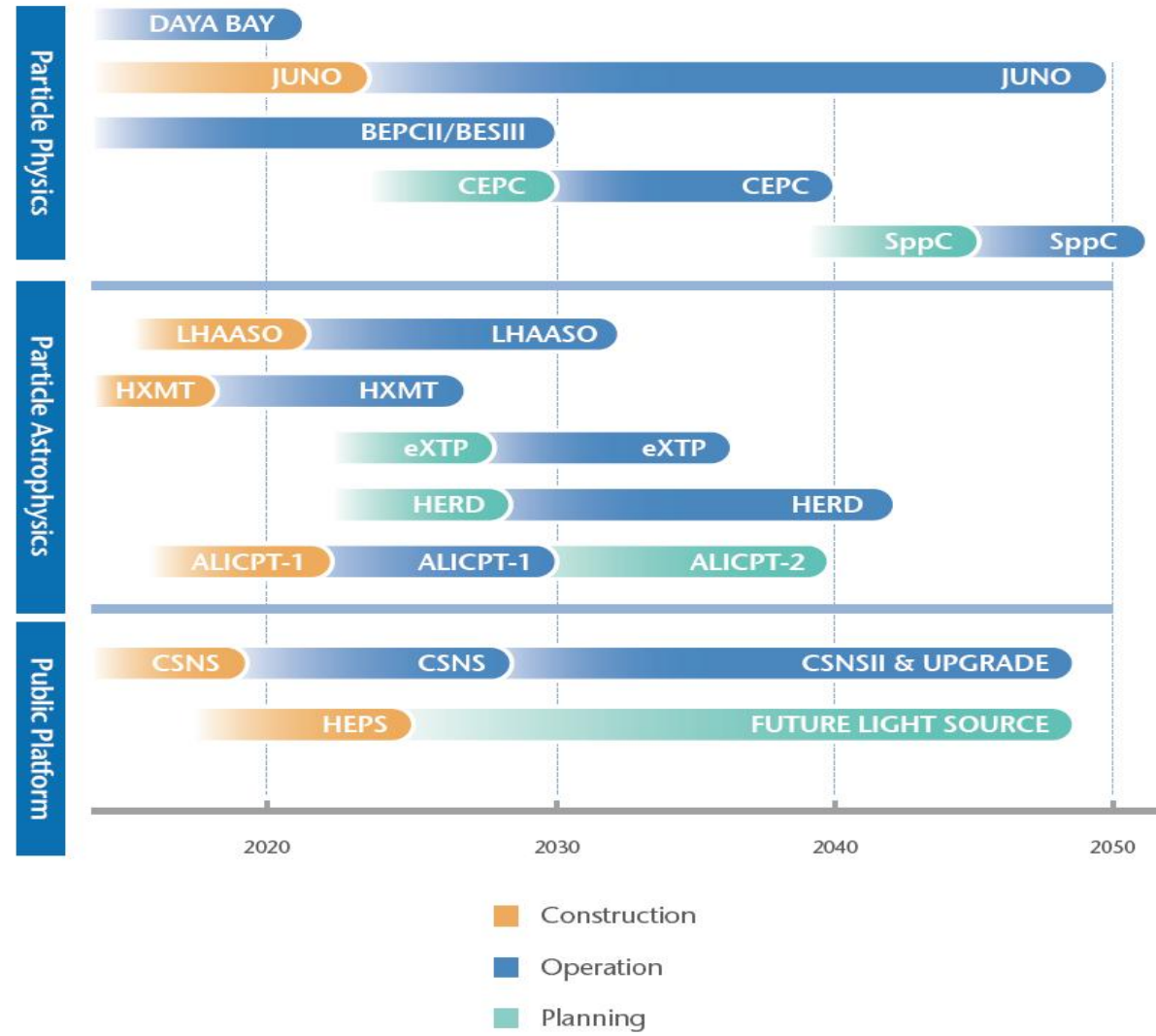
## IHEP “1-7-5 Development Plan”

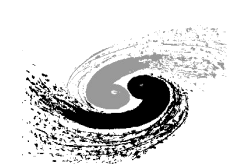
**One Vision:** One of the world’s leading particle physics research centers, and a world-class, large-scale, comprehensive, multidisciplinary research base.

<b>Seven Priority Development Areas</b>	1. Charm physics
	2. Neutrino physics
	3. Particle Astrophysics
	4. High Energy Photon Source
	5. CSNS-II and SAPS
	6. Key tech of large-scale research infrastructures
	7. Development and application of radiation tech

<b>Five Emerging and Frontier Areas</b>	1. High Energy Colliders and Collider Physics
	2. Extreme universe and high energy cosmic rays
	3. Quantum computing and AI in HEP
	4. Plasma wakefield acceleration
	5. Electronic technology for wireless detectors

## Large Science Facilities – long term plan





# Opportunities

Contact: [lianggj@ihep.ac.cn](mailto:lianggj@ihep.ac.cn),  
HR department of IHEP  
Tel : +86-10-88238366,  
Mobile:+86-15810350906

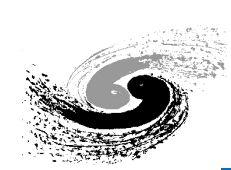
We are always searching for more **excellent scientists and engineers** at all career stages to join us in exploring this amazing universe.

We have long- and short-term opportunities available in our world-class research programs in the fields of

- *Experimental particle physics*
- *Accelerator science and technology*
- *Theoretical particle physics and cosmology*
- *High energy astrophysics and instrumentation for X-ray/gamma-ray/neutrino astronomy and cosmic rays, and CMB experiments and science*
- *Modern X-ray research at the High Energy Photon Source (HEPS), including Beamline Methodology and Instrumentation, Beamline Engineering, Control/Computing and Data Analysis, AI for X-ray Science*
- *Radiotherapy and nuclear medicine*
- *Applications of synchrotron radiation in Environmental science, Life science, Material science, and Nanoscience*
- *Positron annihilation spectroscopy and its application*
- *Computer Science, including Computing and storage, Scientific software, AI and QC computing*
- *X-ray science and advanced X-ray instrumentation (diffraction, fluorescence, Compton scattering)*
- *Materials and condensed matter science*

We offers competitive pay and benefits programs to attract and retain talented people.

- Sufficient start-up funding
- Competitive salary & housing subsidy
- Relocation expenses
- All standard benefits: insurance package, etc
- Help in enrolling children in kindergarten and school



# Recruitment programs - Staff

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## I. Full Professors

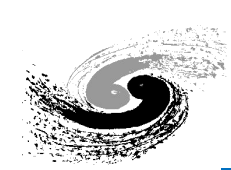
- Professor or equivalent position from a well-known overseas university or research institute.
- Exceptional candidates with an associate professor or equivalent position
- Principal Investigator or key contributor to research projects with significant achievements.

## II. Associate Professors

- Formal position and at least three years of continuous work experience at a well-known overseas university or research institute. Length of work experience negotiable for an exceptional candidate with a Ph.D. degree obtained overseas.
- Significant scientific achievements, potential international influence, leadership ability
- Preferably under age 40, Ph.D. degree
- Tenure-Track Associate Professor positions are available

## III. Tenure-Track Assistant Professors

- Not less than two years of continuous postdoctoral work experience at a well-known university or research institute
- Preferably under 35 years old



# Recruitment programs - Staff

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## IV. Key Technologists

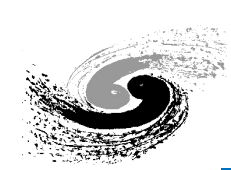
- Research experience from a well-known overseas or domestic university or research institute
- Significant technological achievements.
- Preferably under 40 years old.

## V. International Postdoctoral Fellowship

- Ph.D. in physics, astronomy, chemistry or a related field, or should expect to receive their Ph.D. degree by the time when the appointment will begin

## VI. Special Experts program, 2-3 year term, continuation available

- Need to apply for CAS President's International Fellowship Initiative (**PIFI**) for Special Experts, Chinese Academy of Sciences
- Ph.D. degree



# Postdocs

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Mobile:+86-15810350906

Unlike relatively smaller university groups, **IHEP is always open** to postdoc applications in almost **all research areas**. IHEP has 220 postdocs now.

- Competitive salary (250-600k RMB/yr, in average 350k RMB or 45k Euro/yr)
- Opportunities working in
  - ✓ International environment, such as ATLAS, CMS, LHCb, ...
  - ✓ World-leading experiments (also have very good international environment) hosted by IHEP, such as BESIII, JUNO, LHAASO, ...
  - ✓ Fast developing and expanding areas, such as synchrotron radiation and neutron science, ...
- Opportunities for IHEP permanent positions

**THANKS!**