

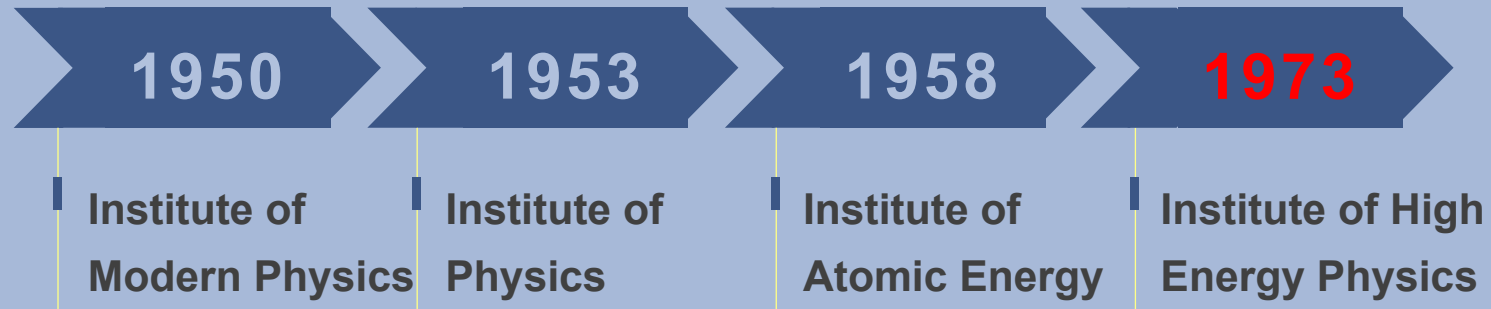
Introduction to IHEP

Jun Cao



**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

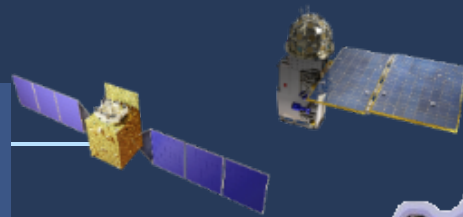
Radiation Technologies and Applications

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

1500 permanent staff, 170 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 Division⁶

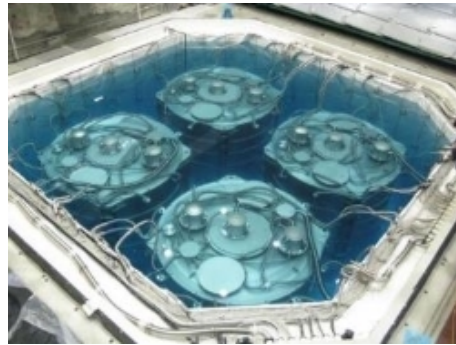
177 staff, 397 temporary (including postdoc, students), totaled 574 people

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



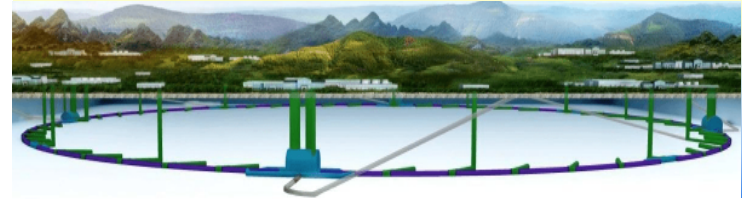
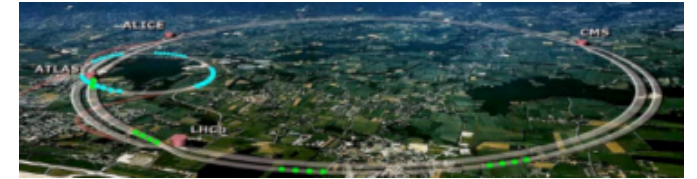
Charm Physics

BESIII, BelleII, PANDA, GlueX



Neutrino Physics

Daya Bay, JUNO, EXO, DarkSide, COMET

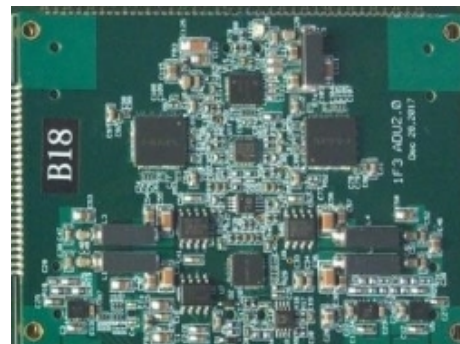


High Energy Frontier

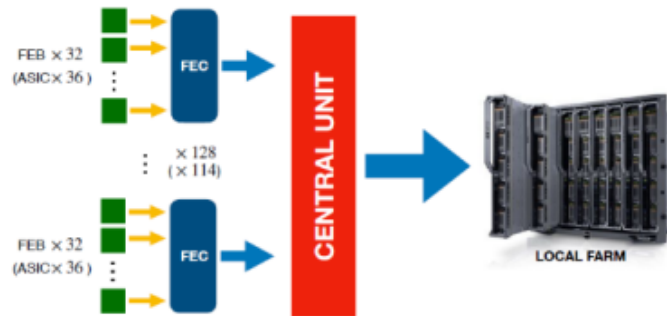
CEPC, LHC (ATLAS/CMS/LHCb)



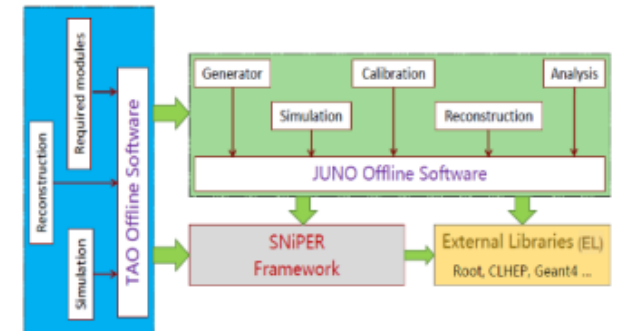
Detector



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

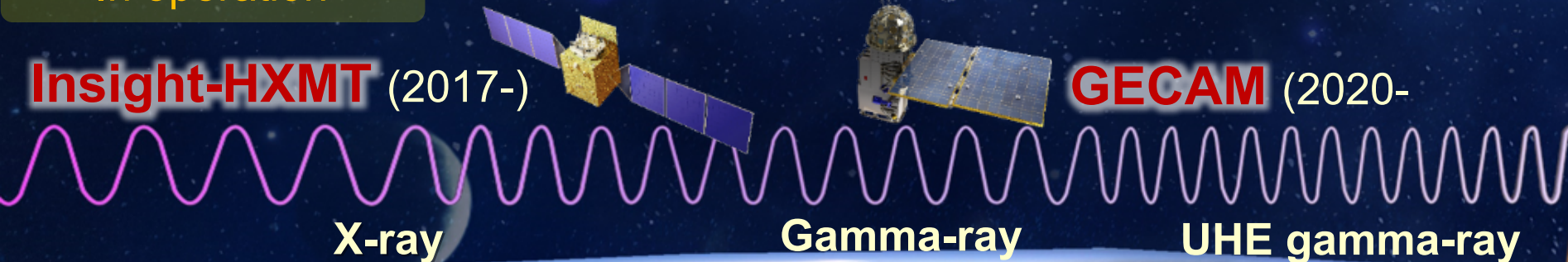
Under development



About to launch



In operation



Primordial gravitational waves
(ultra-high energy scale)
Ali-CPT
(microwave)

LACT
(under development)





Accelerator Technology – Accelerator Division

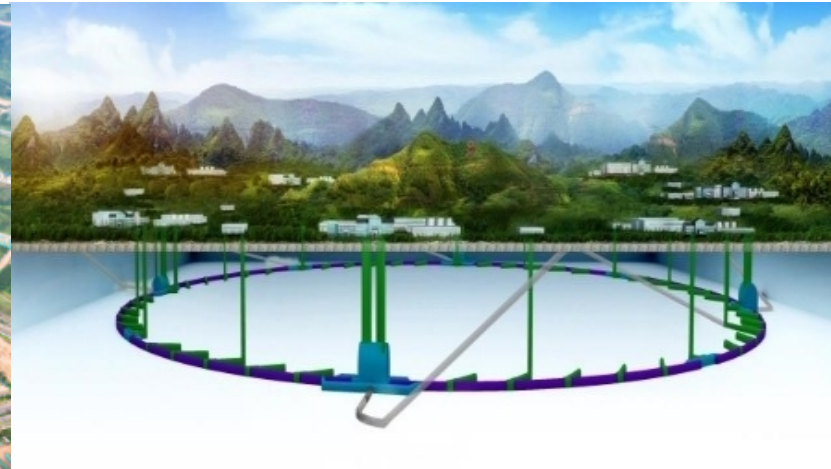
241 staff, 200 temporary



BEPC



HEPS

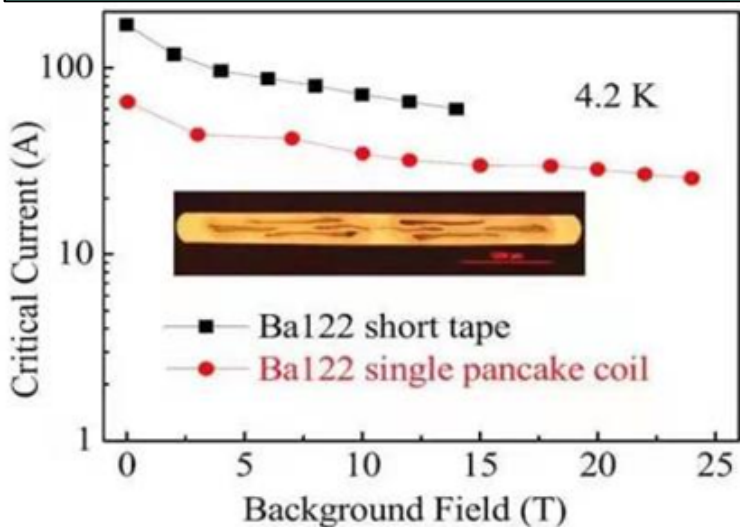


CEPC

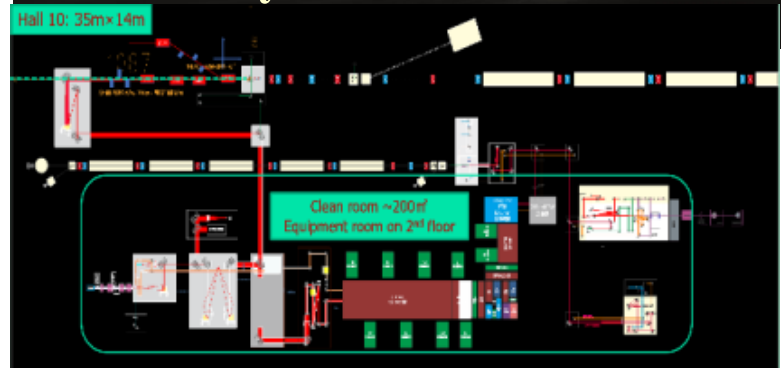


Accelerator key technology R&D platform

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



Backup solution for CEPC linac
Wakefield Acc.



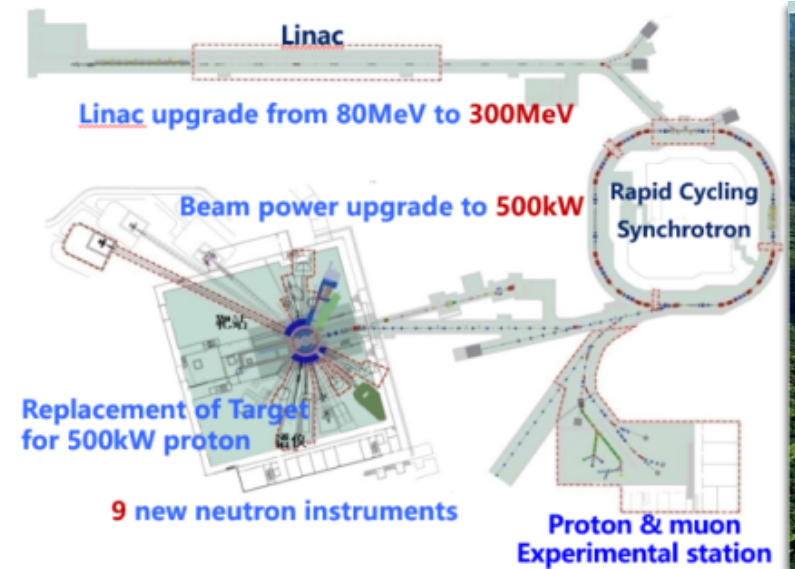
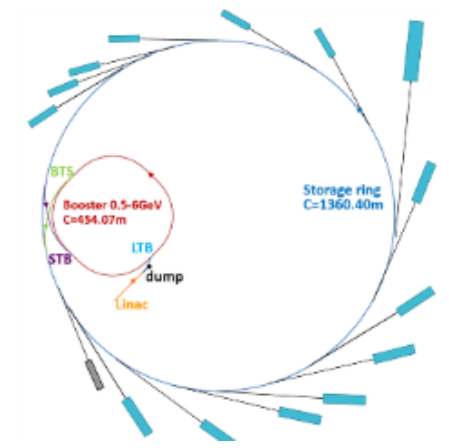


Light Source, Neutron Source, Multi-Disciplinary

Multi-Disciplinary Division, 223 Staff, 289 Temporary



HEPS Beamline phase-I





◆ 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.

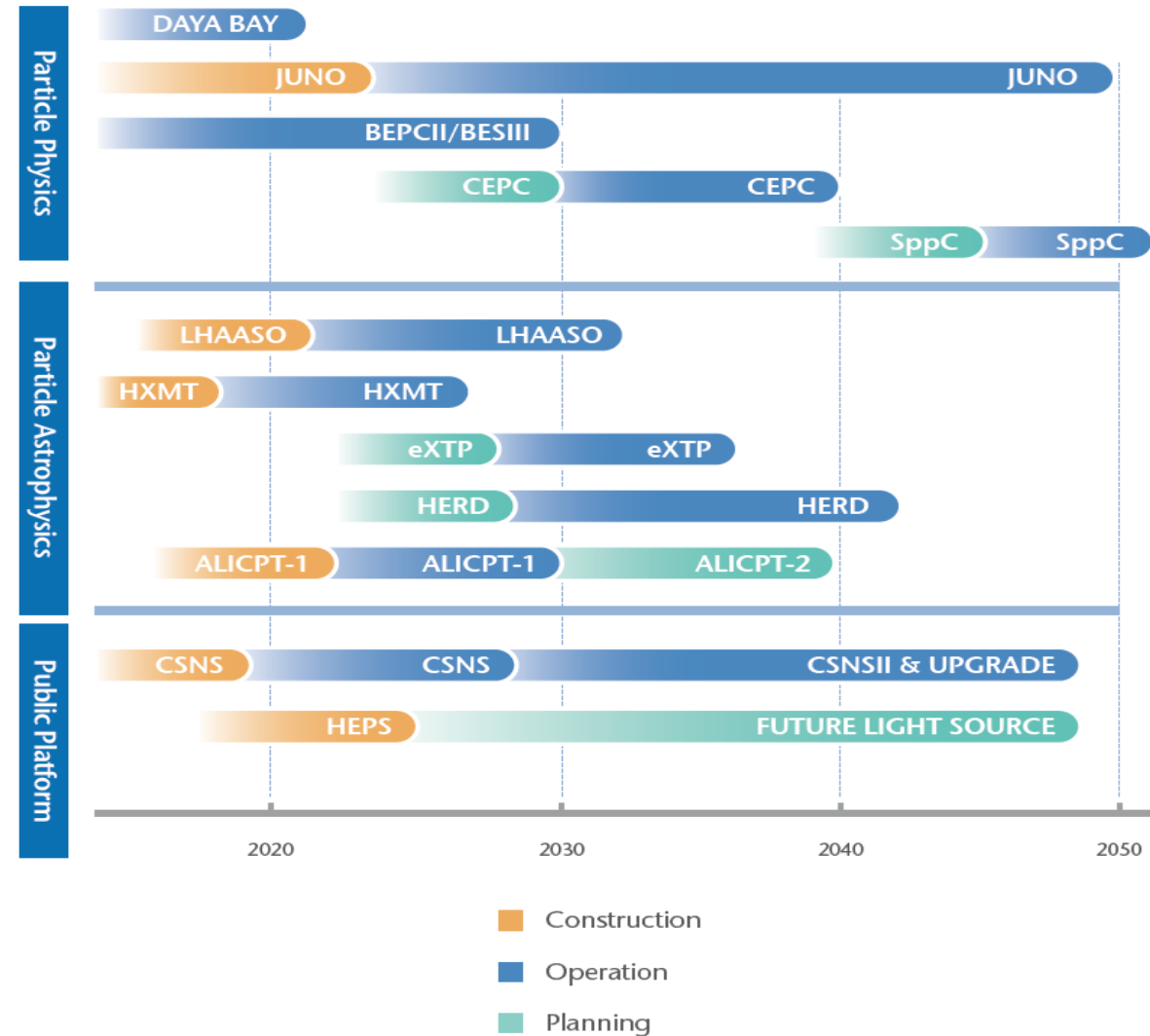
Seven Priority Development Areas

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

Five Emerging and Frontier Areas

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

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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

- **Particle Physics and Nuclear Physics**
- **Astronomy and Astrophysics**
- **Theoretical physics**
- **Accelerator and Neutron physics**
- **Synchrotron radiation and applied research**
- **Nuclear technology and applications**
- **Computer 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

III. 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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Unlike relatively smaller university groups, **IHEP is always open** to postdoc applications in almost **all research areas**. IHEP has 170 postdocs now and plan to double this number in a few years.

- 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!