

First Bulletin of the 15th International Workshop on Advanced Computing and Analysis Techniques in Physics Research – ACAT2013

Dear colleague:

We have the honor to inform you that the 15th International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT2013) is to be hosted by the Institute of High Energy Physics (IHEP) of Chinese Academy of Sciences (CAS) in Beijing on May 16 – 21, 2013.

The conference language is English. All presentations including discussions and submitted materials must be in English.

1. International Advisory Committee

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2. Local organizing committee:

Gang Chen (Computing center, IHEP)
Yajun Mao (Peking Univ.)
Yuanning Gao (Tsinghua Univ.)
Xuebin Chi (Supercomputer center, CAS) Co-Chairman
Wengan Ma (University of Science and Technology of China)
Weidong Li (Experimental center, IHEP)
Ying Chen (Theory, IHEP)
Jianxiong Wang (Theory, IHEP) Co-Chairman
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Bin Gong (IHEP) Scientific Secretary
Tiejun Deng (IHEP) Administrative Secretary

3. Scientific Aim:

The ACAT workshop series, formerly AIHENP (Artificial Intelligence in High Energy and Nuclear Physics), was created back in 1990. Its main purpose is to gather researchers related with computing in physics research together, from both physics and computer science sides, and bring them a chance to communicate with each other. It has established bridges between physics and computer science research, facilitating the advances in our understanding of the Universe at its smallest and largest scales. With the Large Hadron Collider and many astronomy and astrophysics experiments collecting larger and larger amounts of data, such bridges are needed now more than ever.

The 15th edition of ACAT aims to bring related researchers together, once more, to explore and

confront the boundaries of computing, automatic data analysis and theoretical calculation technologies. It will create a forum for exchanging ideas among the fields and will explore and promote computing, data analysis and theoretical calculation technologies in fundamental physics research.

4. Topics:

1. Computing Technology for Physics Research

1. Languages, Software quality, IDE and User Interfaces

- a) Languages (new C++ standard, Java, ...)
- b) Software quality assurance; code reflection; documentation, performance and debugging tools
- c) IDE and frameworks
- d) User Interfaces, Common Libraries.

2. Distributed and Parallel Computing

- a) Multilevel parallelism
- b) Distributed computing
- c) GRID and Cloud Computing

3. New Architectures, many and multi-cores

- a) multi-cores
- b) accelerator-based computing (GPU, etc)
- c) High precision computing (hardware)

4. Virtualisation

5. Online Monitoring and Control

- a) High Level Triggering (HLT)

2. Data Analysis - Algorithms and Tools

1. Machine Learning

- a) Neural Networks and Other Pattern Recognition Techniques
- b) Evolutionary and Genetic Algorithms
- c) Automation of Science: Data to formula

2. Advanced Data Analysis Environments

- a) Statistical Methods, Multivariate analysis
- b) Data Mining

3. Simulation, Reconstruction and Visualisation Techniques

- a) Detector and Accelerator Simulations, MC and fast MC
- b) Reconstruction Algorithms
- c) Visualization Techniques; event displays

4. Advanced Computing

- a) Quantum Computing
- b) Bio Computing: life process simulation, brain simulation, Quantum biology

3. Computations in Theoretical Physics: Techniques and Methods

1. Automatic Systems

- a) Automatic Computation Systems: from Processes to Event Generators
- b) Multi-dimensional Integration and Event Generators
- c) Intensive High Precision Numerical Computations: Algorithms and Systems

2. Higher orders

- a) One-loop event generators
- b) Multi-loop Calculations and Higher Order Corrections

3. Computer Algebra Techniques and Applications

4. Others

Lattice QCD, Cosmology, Universe Large Scale Structure, Gravitational wave, nuclear physics N-body computation, plasma physics, climate

5. Workshop Site

The Workshop will be held at the Institute of High Energy Physics. The campus is in the west part of Beijing, 15 km from Tian'anmen Square, 45km from the Beijing international airport. All information can be accessed online through the web page: <http://acat2013.ihep.ac.cn/>

6. Contributions and abstracts

Abstract submission deadline: **February 15, 2013.**

Abstracts should be submitted using [ACAT2013 Indico web page](#).

7. Proceedings

The proceedings of the conference will be published by IOP with open access.

8. Registration and Accommodation

Registration and Accommodation deadline: **March 15, 2013.**

People willing to participate should carefully fill in the Registration Form on the web page of the workshop ([click here](#)).

We have reserved for the workshop participants a number of rooms in the guesthouse of IHEP,

close to the workshop venue. The price is about 300 Yuan/night for single or double occupancy for the double room. There is also a nearby Holiday Inn about 1500m from the campus, the detail information will be shown in the web page.

9. Visa

The Organizing Committee will be responsible for issuing visa application forms to the participants and their families. Please register for the workshop before you request the letter of invitation.

10. Workshop fee

The Workshop fee is US\$400. This includes a conference-kit, lunches, social events, coffee breaks and proceedings, the details will be shown in the web page. The workshop fee can be paid at the registration desk upon arrival (card payment could be accepted).

11. Transportation

IHEP is located 45 km from the Beijing International Airport. It is strongly suggest to take taxi (it takes about 150 CNY in total). IHEP can also be reached by taking subway, detailed information will be shown in the web page.

12. Network Access

The conference webpage: <http://acat2013.ihep.ac.cn/>, It can be registered on site.

13. Contact

If you have any questions or comments, please send an e-mail message to the following address: acat2013@ihep.ac.cn.

14. Important dates

Deadline for contributions (papers, posters) submission: February 15, 2013

Deadline of the registration: March 15, 2013

Arrival: May 14-16, 2013

Beginning of the meeting: May 16, 2013

End of the meeting: May 21, 2013

Beginning of the Registration: October 15, 2012

Information on registration, local accommodation, transportation, and other relevant issues will be available soon on-line.

Early information enquiry can be sent to: acat2013@ihep.ac.cn

We look forward to seeing you in Beijing.

Sincerely Yours

ACAT2013

Organizing Committee

2012-08-29