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About 3rd ICCS Workshop

The 3rd International Center for Computational Science (ICCS) Manycore and Accelerator-based High-performance Scientific Computing Workshop should bridge the gap between cutting edge new computing technologies and scientific application programmers and users. It should inspire and encourage faculty, staff and students alike to learn about tools and methods how to use such new facilities (such as multi- or many-core architectures, like e.g. GPU or FPGA) and it should be a forum for experts and students to exchange their knowledge and experience among different disciplines and between academia and industry. Holding our workshop at NAOC means that especially computational astrophysics and astrophysical data processing will be important issues, but at the same time a strong interdisciplinary program is our goal.

We think that many-core and accelerated computing is an importing stepping stone in hardware and software development towards Exaflop/s computing. ICCS as the patron of our series of schools and workshops (before in Stanford and Berkeley) is a collaboration founded by four institutions in US, China, Germany, Japan, who each provide considerable hardware and software resources and want to foster collaboration and the use of new facilities in their communities.

In these goals we aim to collaborate with the HPC Advisory Council, which works for similar goals on a larger international scale.

The 3rd ICCS School and Workshop will also be an excellent opportunity for Chinese students and researchers to meet and discuss with national and international experts of advanced supercomputing and to help further advancing Chinas role in scientific supercomputing - towards the Exaflop/s scale.

Our goals are summarized as:

- support and encourage international and interdisciplinary collaborations
- educational and training prospects for future researchers, educators and students, especially from China and Asia
- providing leadership for participating institutions and facilities in the cutting-edge technologies
- promote academia-industry partnerships

Sponsored by:

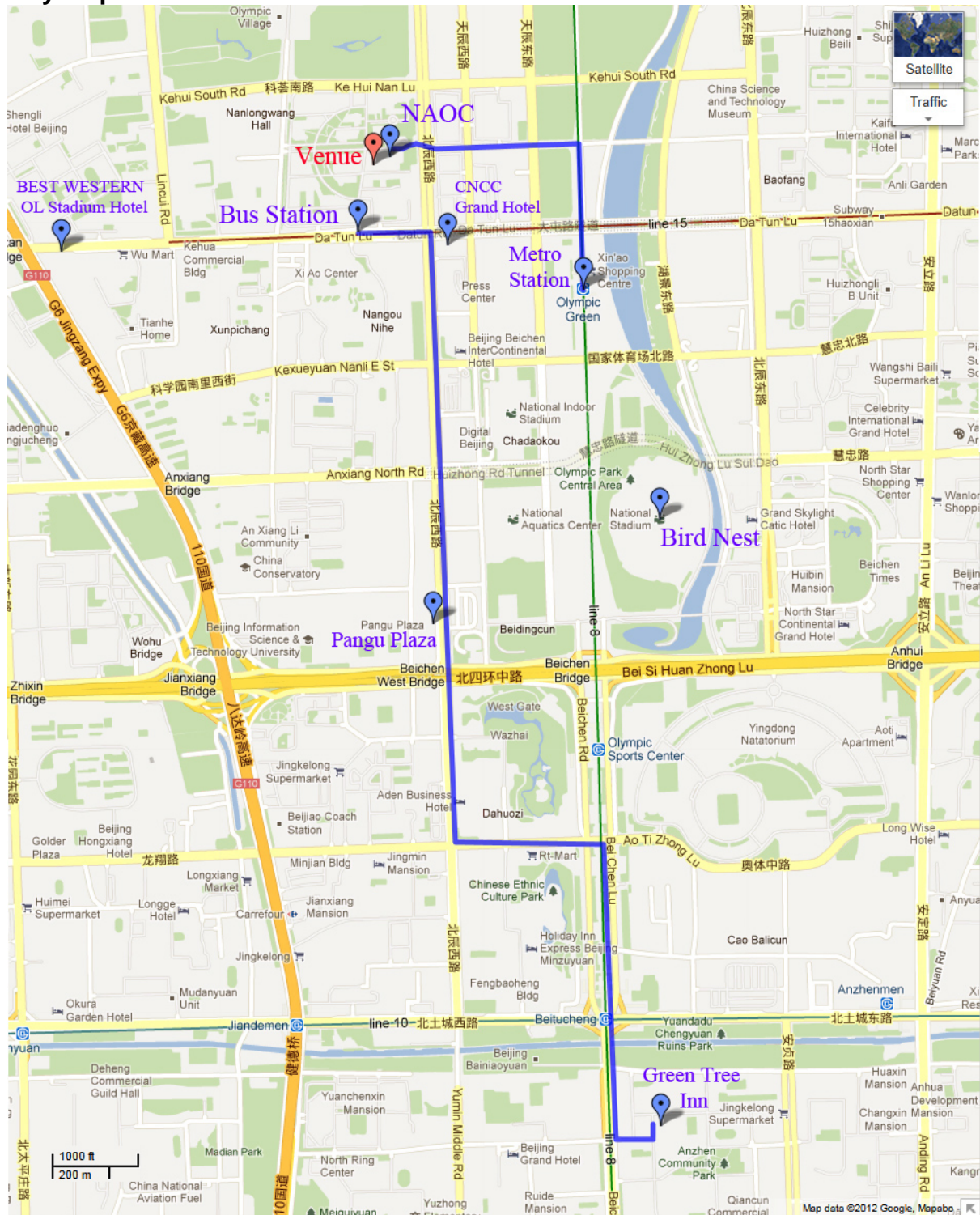


Conference Timetable

Date	Time	Activity	Venues
Mar. 26	08:30-15:00	Registration & Reception	South Gate Lobby of Building A, NAOC
	09:00-09:10	Opening	Main Lecture Hall, NAOC
	09:10-17:30	Tutorials Lectures	Main Lecture Hall, NAOC
	17:30-19:30	Hands-On Session	Main Lecture Hall, NAOC
	19:00-22:00	Informal Breakout Meetings	Room A308, NAOC
Mar. 27	09:00-15:30	Tutorials Lectures	Main Lecture Hall, NAOC
	16:00-19:30	Hands-On Session	Main Lecture Hall, NAOC
	19:00-22:00	Informal Breakout Meetings	NAOC, Room A308
Mar. 28	09:00-17:10	Scientific Sessions	Main Lecture Hall, NAOC
	19:00-22:00	Informal Breakout Meetings	Room A308, NAOC
Mar. 29	09:00-16:50	Scientific Sessions	Main Lecture Hall, NAOC
	18:30-22:00	Conference Dinner	Ao Bei Tian Xiang Restaurant (2 nd Floor of North Canteen)
Mar. 30	09:00-11:30	Scientific Sessions	Main Lecture Hall, NAOC
	11:30-12:00	Closing Remarks	Main Lecture Hall, NAOC

Venue Maps

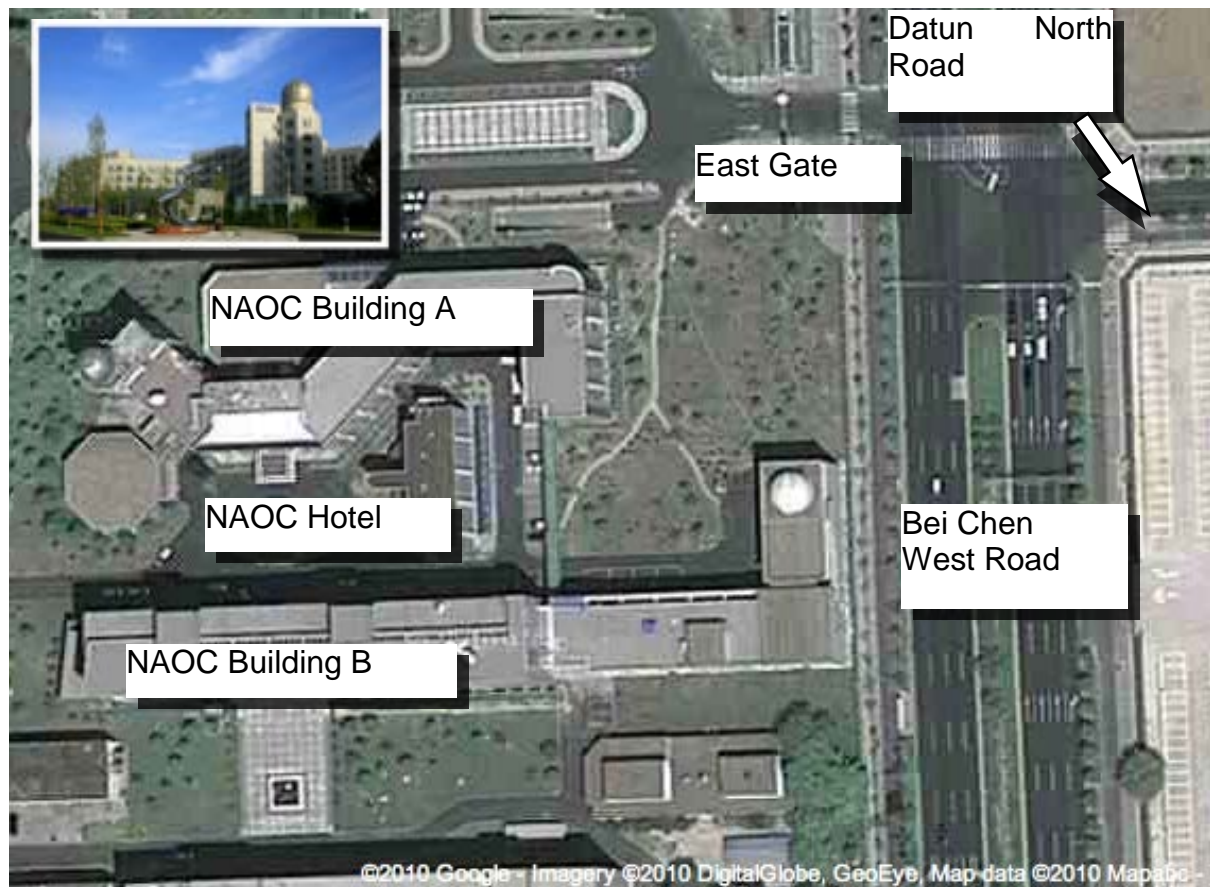
City Map



Map address:

<http://silk0.bao.ac.cn/iccs-map>

NAOC Map



Metro Access to NAOC:

From the airport: Take [Airport Express \(Direction: Dongzhimen\)](#). Get off Airport Express at **Sanyuanqiao Station**. Transfer to [Metro Line 10 \(Direction: Bagou\)](#). Get off Metro Line 10 at **Beitucheng Station**. Transfer to [Metro Line 8 \(Direction: Huilongguan Dongdajie\)](#). Get off at **Olympic Green Station** then walk towards northeast gate (As shown in City Map). Find attached a Metro map.

Detailed maps is in <http://jtcx.beijing.cn/bjdt/>



Program

Lecture (L) & Invited Talks (I):
Contributed Talks (C):

30mins presentation + 10mins discussion
 15mins presentation + 5mins discussion

March 26, Monday, at NAOC Main Lecture Hall		
09:00 - 09:10: Opening		
09:10 - 10:40	Hemant Shukla	(L) CUDA for Beginners
10:40 - 11:10	Coffee Break	
11:10 - 12:40	Guillermo Marcus	(L) OpenCL for Starters, Programming Models for GPU/FPGA
12:40 - 14:00: Lunch Break (Note: For a Payment of 100 Yuan at registration Lunch Boxes for five days will be provided)		
14:00 - 15:30	Tsuyoshi Hamada	(L) How to Build a Cost-Efficient Supercomputer?
15:30 - 16:00	Coffee Break	
16:00 - 17:30	Wen-mei Hwu	(L) Advanced GPU Programming for Science, Part 1
17:30 - 19:30	First Hands-On Session	
19:00- 22:00	Informal Breakout Meetings / Gathering in NAOC Seminar Room A308 (Some Drinks provided, please also bring your own!)	

March 27, Tuesday, at NAOC Main Lecture Hall		
09:00 - 10:30	Wen-mei Hwu	(L) Advanced GPU Programming for Science, Part 2
10:30 - 11:00	Coffee Break	
11:00 - 12:30	Wen-mei Hwu	(L) Advanced GPU Programming for Science, Part 3
12:30 - 14:00: Lunch Break (Note: For a Payment of 100 Yuan at registration Lunch Boxes for five days will be provided)		
14:00 - 15:30	Wen-mei Hwu	(L) Advanced GPU Programming for Science, Part 4
15:30 - 16:00	Coffee Break	
16:00 - 19:30	Second Hands-On Session	
19:00- 22:00	Informal Breakout Meetings / Gathering in NAOC Seminar Room A308 (Some Drinks provided, please also bring your own!)	

March 28, Wednesday, at NAOC Main Lecture Hall		
09:00 - 09:40	Wen-mei Hwu	(I) Advancing Heterogeneous Parallel Computing in Blue Waters
09:40 - 10:20	Sonja Uphoff	(I) A Multi-GPGPU Implementation of The Lattice Boltzmann Method for Large Eddy Simulations
10:20 - 10:50	Coffee Break	
10:50 - 11:30	Yifeng Chen	(I) GPU Programming Technologies with PARRAY
11:30 - 11:50	Guillermo Marcus	(C) Improving IO between Host Applications and GPUs
11:50 - 12:10	Klaus Rieger	(C) Grid Job Scheduling with GPU Clusters (Green Grid)
12:10 - 14:00: Lunch Break (Note: For a Payment of 100 Yuan at registration Lunch Boxes for five days will be provided)		
14:00 - 14:40	Long Wang	(I) SC_PEtot: a Plane Wave Pseudopotential Density Functional Theory Code on GPU Cluster (GPU Clusters in Material Science)
14:40 - 15:20	Guangmin Tan,	(I) Single-particle 3D Reconstruction on Specialized Stream Architecture and Comparison with GPGPUs
15:20 - 15:50	Coffee Break	
15:50 - 16:30	Yunquan Zhang	(I) Optimizing SpMV for Diagonal Sparse Matrices on GPU
16:30 - 17:10	Tong Liu	(I) HPC Development by HPC Advisory Council
19:00- 22:00	Informal Breakout Meetings / Gathering in NAOC Seminar Room A308 (Some Drinks provided, please also bring your own!)	

March 29, Thursday, at NAOC Main Lecture Hall		
09:00 - 09:40	Changbom Park	(I) Horizon Run Cosmological N-body Simulations
09:40 - 10:20	Mario SPERA	(I) Self-Gravitating Systems Studied with High Precision, High Performance Codes on Hybrid Computing Architectures
10:20 - 10:50	Coffee Break	
10:50 - 11:30	Ying Liu	(I) Data Mining Algorithm Acceleration by GPU
11:30 - 12:10	Felipe Cruz	(I) Energy Management on DEGIMA Cluster
12:10 - 14:00: Lunch Break (Note: For a Payment of 100 Yuan at registration Lunch Boxes for five days will be provided)		
14:00 - 14:40	John Xie	(I) NVIDIA Roadmap
14:40 - 15:00	Juhan Kim	(C) Development of the GPU-Powered Cosmological Hydrodynamic Code
15:00 - 15:20	Hsi-Yu Schive	(C) Novel Adaptive Mesh Refinement Code with GPU Acceleration and Its Applications to Astrophysics
15:20 - 15:50	Coffee Break	
15:50 - 16:10	Jose Fiestas	(C) Growing Black Holes in Galaxy Cores: Astrophysical Simulations on GPU Clusters
16:10 - 16:30	Shuo Li	(C) Supermassive Black Hole Binary Evolution and Electromagnetic Counterparts
16:30 - 16:50	Peter Berczik	(C) Supermassive Black Hole Binary Evolution in Disk Galaxy Mergers
18:30- 22:00	Conference Dinner at Ao Bei Tian Xiang Restaurant (2nd Floor of North Canteen in Campus)	

March 30, Friday, at NAOC Main Lecture Hall		
09:00 - 09:40	Rainer Spurzem	(I) Direct N-Body for Astrophysics on GPU Clusters in Three Continents
09:40 - 10:20	Ge Wei	(I) Multi-Scale Physics Simulations on Large GPU Clusters
10:20 - 10:50	Coffee Break	
10:50 - 11:30	Hemant Shukla	(I) Infrastructure for Astrophysics Application Computing
11:30 - 12:00: Closing Remarks		
12:00 - 12:15: Farewell		
12:15 - 14:00: Lunch (Note: For a Payment of 100 Yuan at registration Lunch Boxes for five days will be provided)		

Posters

Poster 1: Narayan Kulkarni, C-DAC R&D Pune:
Performance Analysis of Rodinia Benchmark on Intel MIC (Knights Ferry)

Poster 2: Jongsuk Hong, Seoul National Univ.:
N-Body Simulation of Rotating Star Clusters with 2 Mass Components Using NBODY4 and GRAPE6

Poster 3: Yeong-bok Bae: Seoul National Univ.:
Neutron Star and Black Hole Binaries in Globular Clusters

Poster 4: Lei Liu, NAOC and ARI/IMPRS Heidelberg:
Astrophysical SPH Simulations with the RaceSPH Library

Poster 5: Shiyan Zhong, Peter Berczik, Rainer Spurzem:
N-Body Models of Black Holes with Star Accretion in Galactic Nuclei

Poster 6: Rainer Spurzem, Peter Berczik, Shiyan Zhong:
Black Holes in Galactic Nuclei Simulated with Large GPU Clusters in CAS

Poster 7: Chingis Omarov, Rainer Spurzem, Andreas Just, et al.:
Simulating Dense Star-Gas Systems in Galactic Nuclei

Participants List

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Local Information

Public Transportations

A very nice asset is to buy an Yi Ka Tong (一卡通) - it is a prepaid riding card, usable for both buses and metro. You can buy it at manned counters and machines in metro stations (not at the airport as far as we know). Fill it with 20 or 50 Yuan and you have plenty of rides. The card is also valid for the airport express train, if your credit is enough (25 Yuan).

Airport:

Most of international travellers arrive at Beijing International Airport. Both Terminal 2 and Terminal 3 serve international flights, they are far from each other, connected by bus shuttle. Make sure you notice your arrival terminal, for correct return at departure. Both terminals have clear signposts on arrival to taxi stands. Don't worry - even a long queue will move quickly, because there are incredibly many taxis. NEVER follow taxi touts (people offering a taxi ride outside the official queue) - they overcharge you. Always go to the official taxi queue (arrival level in Terminal 2, basement in Terminal 3).

Metro:

Beijing has a very efficient local metro network. The metro including ticket machines is bilingual (Chinese and English) and easy to navigate for foreigners. A metro trip cost a flat fare of 2 Yuan including all changes.

Bus:

The bus network is vast, and buses vary widely in quality - from top level hybrid air condition to very old and worn out. Routes displayed in Chinese only. Fares may vary according to distance. A single bus ride using the Yi Ka Tong may be as cheap as 0.4 Yuan. In some buses you have to swipe the card at entry only, in some others twice (at entry and exit). Look how the locals do.

Taxi:

Legitimate taxis should have a 'B' in the license plate, a driver's picture ID on the dashboard and should always switch on the meter. It is absolutely IMPORTANT that you understand that the average Beijing taxi driver speaks not a single word English. Make sure you have lots of LARGE printouts in CHINESE where you want to go. (See '**Venue Maps**' for destinations in Chinese). Or ask for help in the taxi queue - fellow travellers or the guards. Don't let the taxi start until you are sure the driver has understood where you want to go.

The normal fee from the airport to NAOC or your hotel should be no more than 100 Yuan (actually less, except possibly for very special traffic conditions, extremely long

waiting in traffic jam, etc.). There is no exit or airport construction fee. **ATTENTION:** A motorway fee of 10 Yuan and small fees (few Yuan) for fuel surcharge, baggage or night time may come **ON TOP** of the **METER** rate. After your payment you should receive up to three receipts for all parts of the payment (meter charge, motorway fee, and occasional fuel surcharge).

In case you have any problems or complaints to report, please write down the driver's license number, which is clearly displayed with photo ID of the driver in front of the passenger's seat.

Money and Exchange

Exchanging foreign currency in China is generally easy, but banks may charge a fee and there may be long queues. Always keep receipts of exchange, because you can exchange back an amount of Chinese Yuan into foreign currency only if you have a receipt of exchanging at least this amount originally from foreign currency into Chinese Yuan!!

Most recommendable is to use ATM machines (cash dispenser); they are abounding anywhere. Both air terminals have exchange counters and ATMs. ATM's of Bank of China and ICBC Bank usually work with international credit cards. Near NAOC there is also a Bank of China ATM, and many ICBC ATMs. Many of them display international credit card signs (like VISA, MasterCard, American Express) but don't be frustrated if it does not work - at some banks only national not international credit cards of these brands are accepted. Generally the ATM's of the Bank of China are safe to work with international credit cards; other banks sometimes work, sometimes not. It is no problem to try once, you'll get your card back.

Telephone Service

Most foreign mobile phones work in China. If you want to avoid high roaming charges you can buy a Chinese SIM card easily (at the airport, shops, newspaper booths, or China Telecom offices).

Shopping and Tourism

Pre-book your tour. Using a bus or car offered to you on the street may end up in a big shopping tour, and self-made guides expect that you pay the overpriced bill at the restaurant or the tea shop afterwards. Before following strangers who offer guide, consider that an official guide is often available for only 50 Yuan.

Big surcharges are common at street hawker and shops; fixed shops with fixed prices are in general better for tourists. Some Chinese tourists like to have a photo with foreigners. In general they ask gently and after taking a picture they immediately move on.

Conference Organizers

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EMERGENCY CONTACTS:

Emergency assistance: 120

Fire Department: 119

City Police: 110

Tourist Hotline: (010) 6513-0828

Anything else:

How to dial: To reach a mobile phone or a land line in Beijing, the number you dial may vary, depending on the phone (Foreign mobile phone / Beijing mobile phone / Beijing land line) you are accessing from. Here are some hints.

	Foreign mobile phone	Beijing mobile phone	Beijing land line
Mobile	+86 136 xxxxxxxx	136 xxxxxxxx	136 xxxxxxxx
Land line	+86 10 xxxxxxxx	010 xxxxxxxx	xxxxxxx

For example, you are using a foreign mobile phone to call a local mobile phone, then you will be dialing: +86 136 xxxxxxxx, where '86' is the regional code for China, '136' is a mobile phone prefix (same for 135, 150, 151 etc), and '10' is the area code for Beijing. Note that emergency calls (112, 119 & 110) do not require area code (10 or 010).