International Centre for Theoretical Physics Asia-Pacific (ICTP-AP)

ZHANG MIN

May 17, 2024 | Kuala Lumpur, Malaysia

International Symposium of C2Cs under the Auspices of UNESCO in the field of Natural Sciences

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Overview

United Nations
Educational, Scientific and
Cultural Organization

ICTP-AP
INTERNATIONAL CENTRE FOR
THEORETICAL PHYSICS ASIA-PACIFIC

University of Chinese Academy of Sciences

ICTP-AP is established by Chinese Academy of Sciences (CAS) under the auspices of UNESCO jointly in cooperation with ICTP (Italy) and NSFC (National Natural Science Foundation of China). ICTP-AP operates in affiliation to the University of Chinese Academy of Sciences (UCAS),

CHINESE ACADEMY OF SCIENCES + ICTP + NSFC

As China's first UNESCO category 2 Centre in the area of basic science, ICTP-AP is a non-profit organization and will carry out high-level scientific research, education and training in basic science such as frontiers of theoretical physics and the relevant interdisciplinary areas.

Operates in affiliation to the UCAS

ICTP-AP

Taiji Laboratory

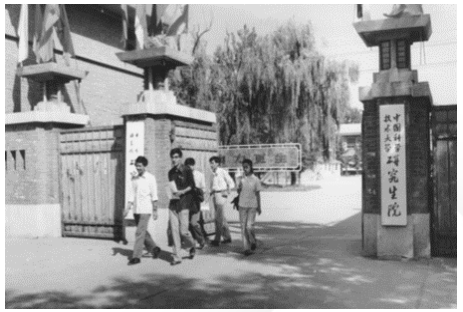
2000: GSCAS was reconstructed and renamed Graduate University of Chinese Academy of Sciences (GUCAS).

2014: UCAS enrolled the first group of undergraduates

GSCAS → GUCAS → UCAS → Enrolment of undergraduate students

1978: Ratified by the State Council, Graduate School of Chinese Academy of Sciences was founded, as the first graduate school in China.

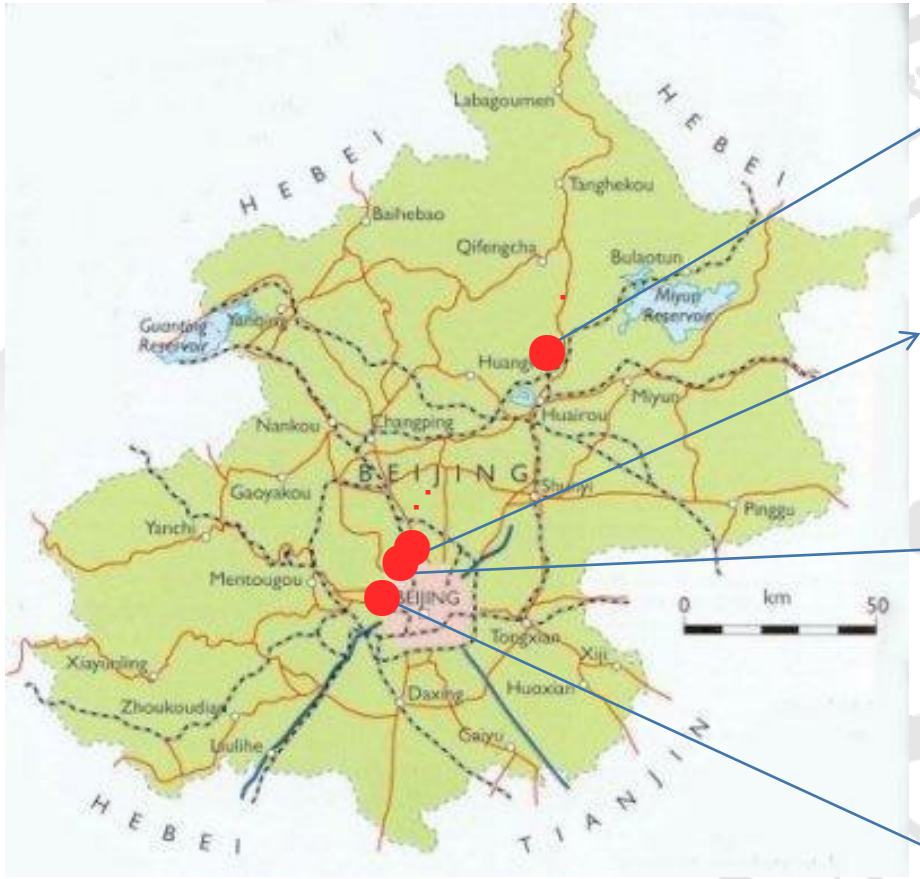
2012 : GUCAS was renamed University of Chinese Academy of Sciences (UCAS).



Operates in affiliation to the UCAS

ICTP-AP

Taiji Laboratory



Yanqi Campus: 3,121,383 m²

Olympic Village Campus: 39,786 m²

Zhongguancun Campus : 58,132 m²

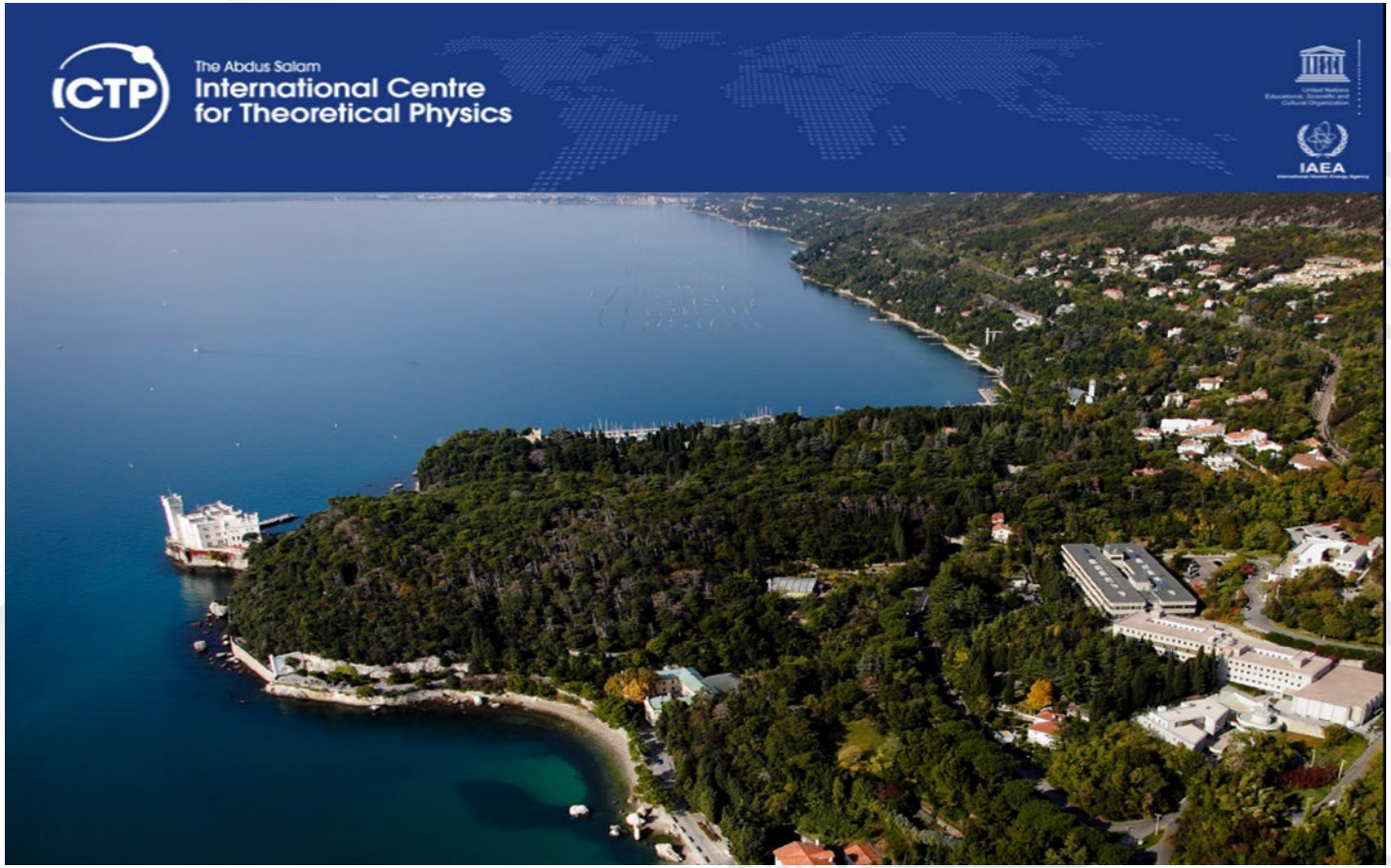
Yuquanlu Campus: 118,374 m²

The total area of UCAS campus is 3,337,648 m², almost 4.3 times as big as the Beijing Forbidden City.

Why cooperation with ICTP

ICTP-AP

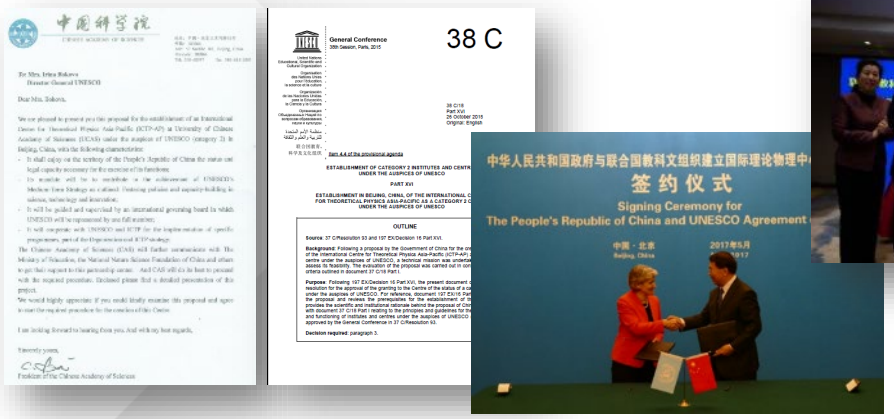
Taiji Laboratory



- To date, ICTP has hosted over 130,000 scientific visits from about 188 countries around the world.
- Over the years, these scientists have benefited from ICTP's various programs to advance their careers and to make contributions for the development of science in their own countries.
- Because of these activities, ICTP has gained a position of wide international visibility as a leading scientific and educational institution.

- ✓ **ICTP is a world-class institution that aims to advance scientific excellence in the developing world.**
- ✓ **ICTP is the first UNESCO Category-1 basic science center**

ICTP-AP Timeline



Signing Ceremony

Officially launched

Supported by NSFC

2014 CAS submit the application

2015 Approved by UNESCO

2017 Unveiling Ceremony

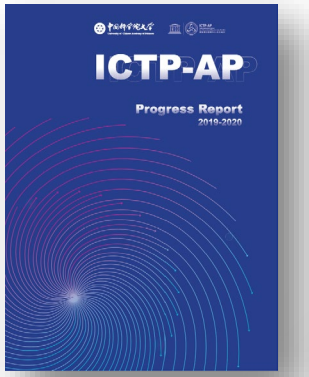
2018

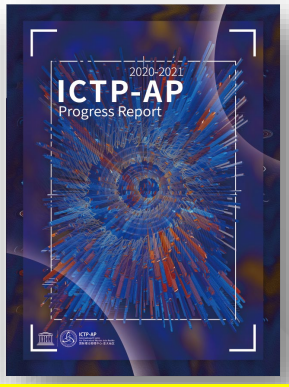
2019 Taiji Lab

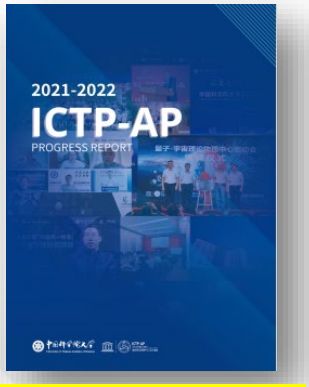
2020 Taiji-01 satellite

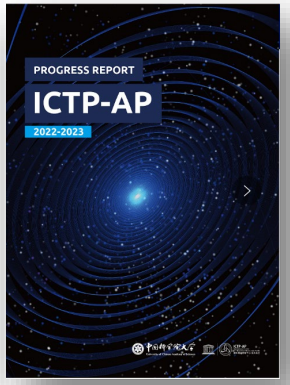
2021

2022 Scientific achievements









Progress Report from 2019

- Research Staff **26**
- Administrative Staff **6**
- Students **48** (Master 27, PhD 21)

Organizational Structure

ICTP-AP

Taiji Laboratory

UCAS

UNESCO

Education

Research

Support

Forum & Symposium
Workshop & Schools
Training & Teaching

High Energy Physics and Unified Field Theory

Cosmophysics and Gravitational Universe

Mathematics and Quantum Complexity Theory

Biophysics and Life Science

Earth System Physics and New Energy

in Construction

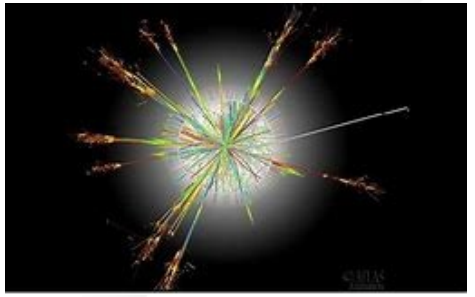
Science Council + Governing Board

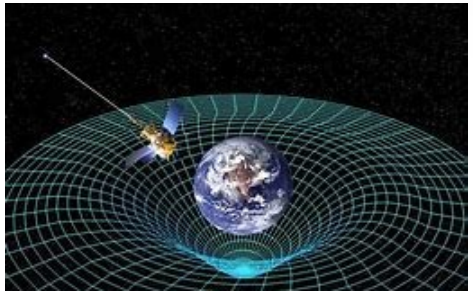
ICTP-AP Lab

ICTP-AP Office

The operation and management of ICTP-AP is carried out under the direction of the Governing Board.

The International Science Council will provide academic guidance for ICTP-AP. Their high level of scientific research and rich experience in international exchange will effectively promote the cooperation and academic exchange between ICTP-AP and international institutions.





ICTP-AP members

1. **Permanent members** employed through UCAS (about 15 top-level scientists in the first period + 15 in the second period), will jointly hire those faculty members with covering all payments including salary.
2. **Centre scientists and visiting scientists:** Two-way double employment with Institutes (UCAS operating mode)
3. Center **Postdoctoral researchers** (2-6 years);
4. Center **graduate students** and **joint-training program students**;
5. **Guest researchers** and **associate members.**

ICTP-AP Missions and Visions

ICTP-AP

Taiji LAB Taiji Laboratory

(a) **Provide opportunities for advanced education, training and research in basic science** such as frontiers of theoretical physics and the relevant interdisciplinary areas for scientists from Asia-Pacific region and other countries;

(b) **Develop outreach activities** in cooperation with national and international institutions, organizing international forums and enhancing collaborative networks among scientists from different countries in and out of the region;

(c) **Develop and coordinate research-education-oriented advanced studies** in theoretical physics and related interdisciplinary areas;

(d) **Become a world-class research center, training center** for talents with global eye sights and international academic exchange center.

Building High-Level Research Group

ICTP-AP

Taiji LAB Taiji Laboratory

From 2019 to now:

6 tenure-track members

13 Postgraduate Student Supervisors

and

6 administrative office members

Registration Time	Name	Research Fields
2020	Jun Nian	String Theory, Black Hole Physics, Quantum Field Theory
2022	Jun Zhang	Non-GR Signatures in Gravitational Waves, Black Holes Super-Radiance and Modified Gravity
2023	Huai-Ke Guo	Gravitational Waves, Dark Matter Detection, New Physics Beyond the Standard Model
2023	Teng Ma	Electroweak Symmetry Breaking, Effective Field Theory, Scattering Amplitudes, Dark Matter Model, New physics
2024	Xiao-Yong Chu	Phenomenology High-energy Physics， Dark Matter, Particle Cosmology
2024	Andrew Miller	New Probes of Dark Matter, Primordial Black Holes and Neutron Stars, Machine Learning Techniques

Jun NIAN

Jun ZHANG

Huaike Guo

Teng Ma

Xiaoyong CHU

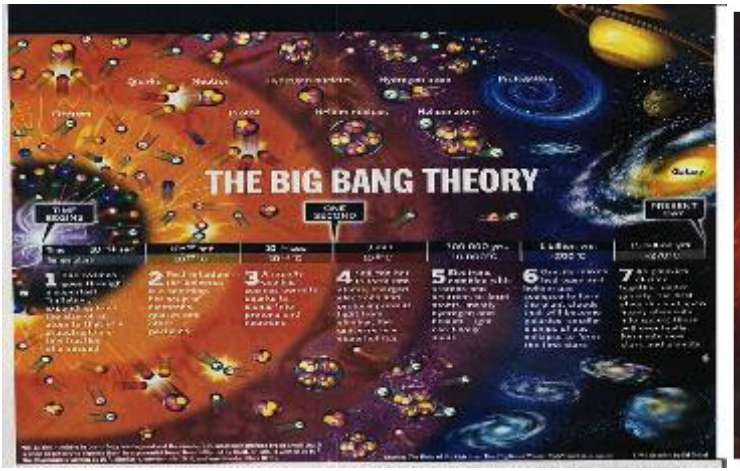
Andrew Miller

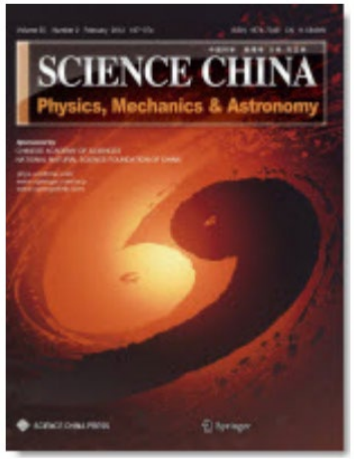
Theory Innovation

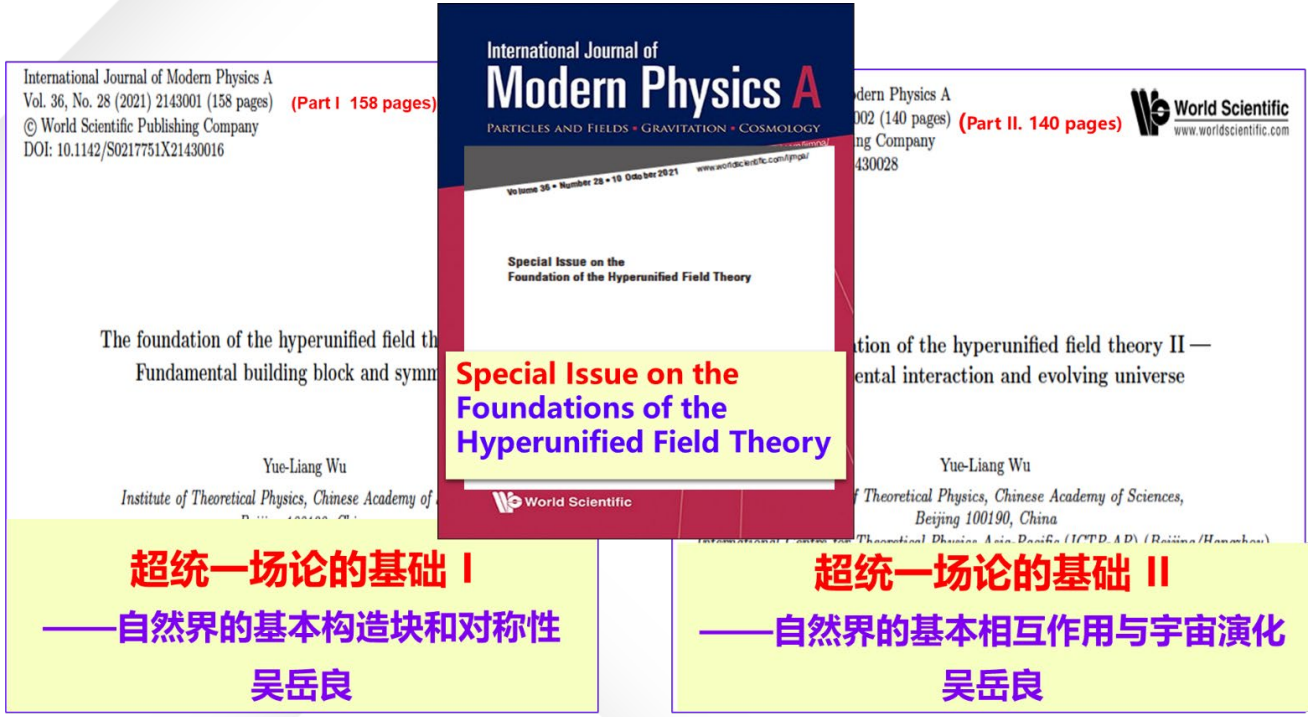
ICTP-AP

Taiji Laboratory

Reconciling GR and QM(QFT) into a single and unified framework, bringing us a deep understanding of the universe, from the smallest quanta to the largest cosmos.







超统一场论的基础 I

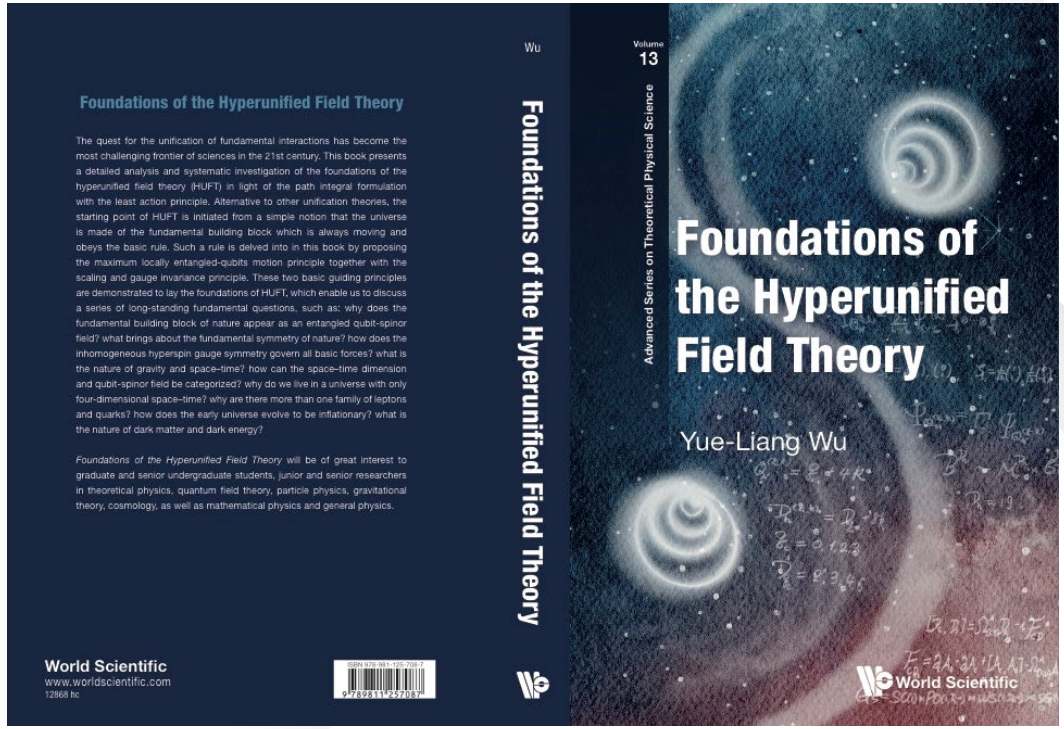
——自然界的基本构造块和对称性

吴岳良

超统一场论的基础 II

——自然界的基本相互作用与宇宙演化

吴岳良



Advancing Emerging Technologies

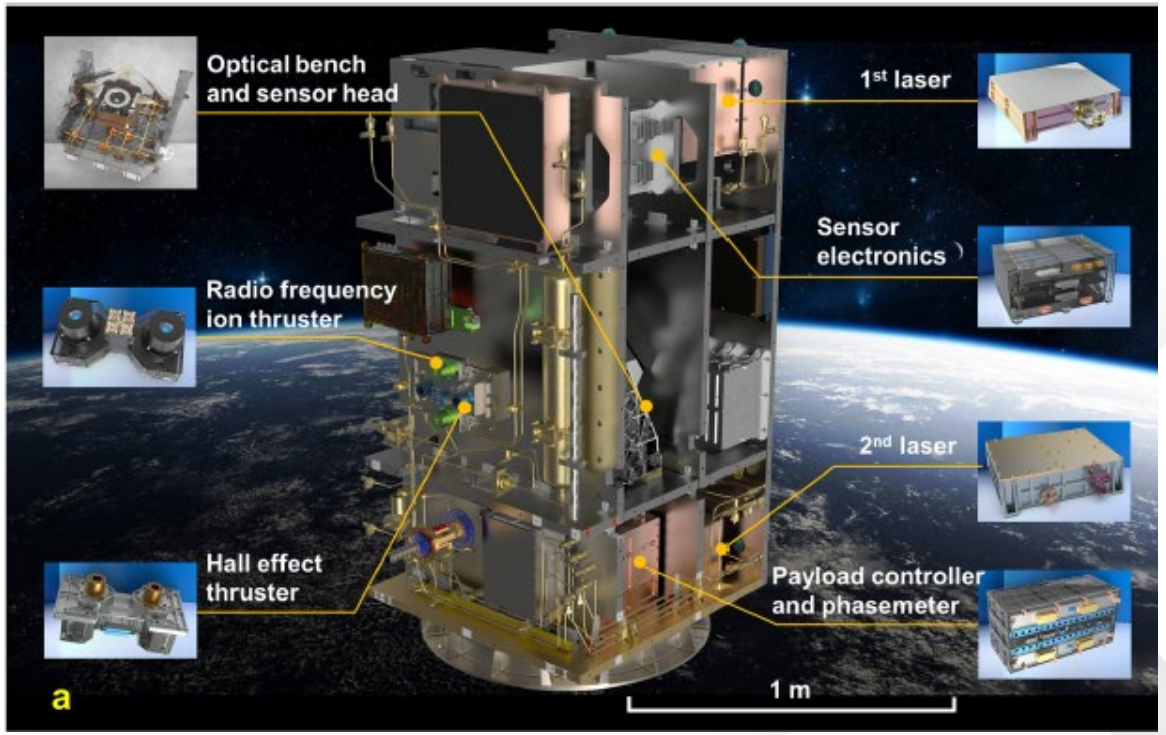
ICTP-AP

Taiji Laboratory

Taiji Program

Gravitational Wave Detection in Space

TAIJI-01 for technological experiments were sent into space by a KZ-1A, carrier rocket from the Jiuquan Satellite Launch Center in northwest China on Aug. 31. 2019



Perspective | Open Access | Published: 24 February 2021

China's first step towards probing the expanding universe and the nature of gravity using a space borne gravitational wave antenna

The Taiji Scientific Collaboration

Communications Physics **4**, Article number: 34 (2021) | Cite this article

1480 Accesses | **1** Citations | **18** Altmetric | Metrics

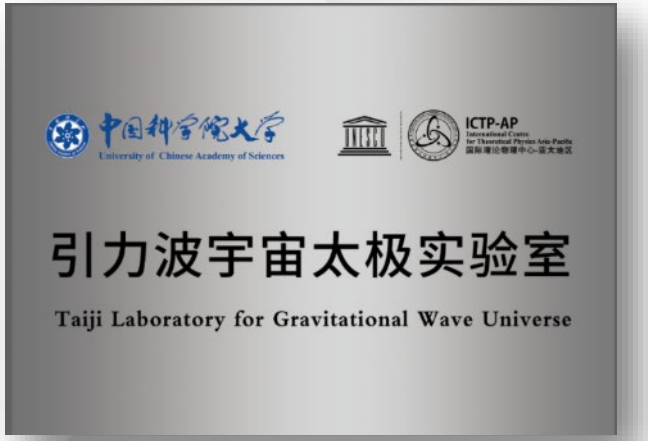
Advancing Emerging Technologies

ICTP-AP

Taiji Laboratory

Taiji Lab

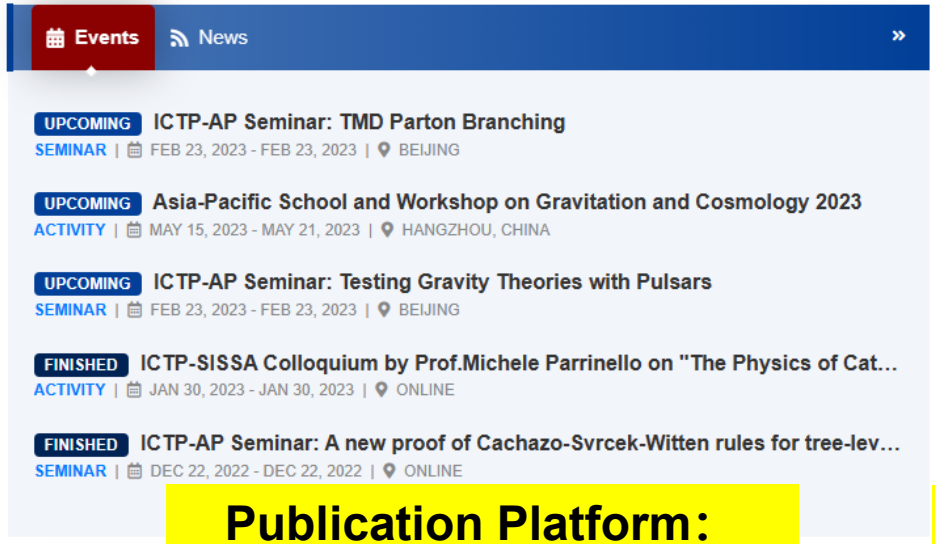
Beijing and Hangzhou



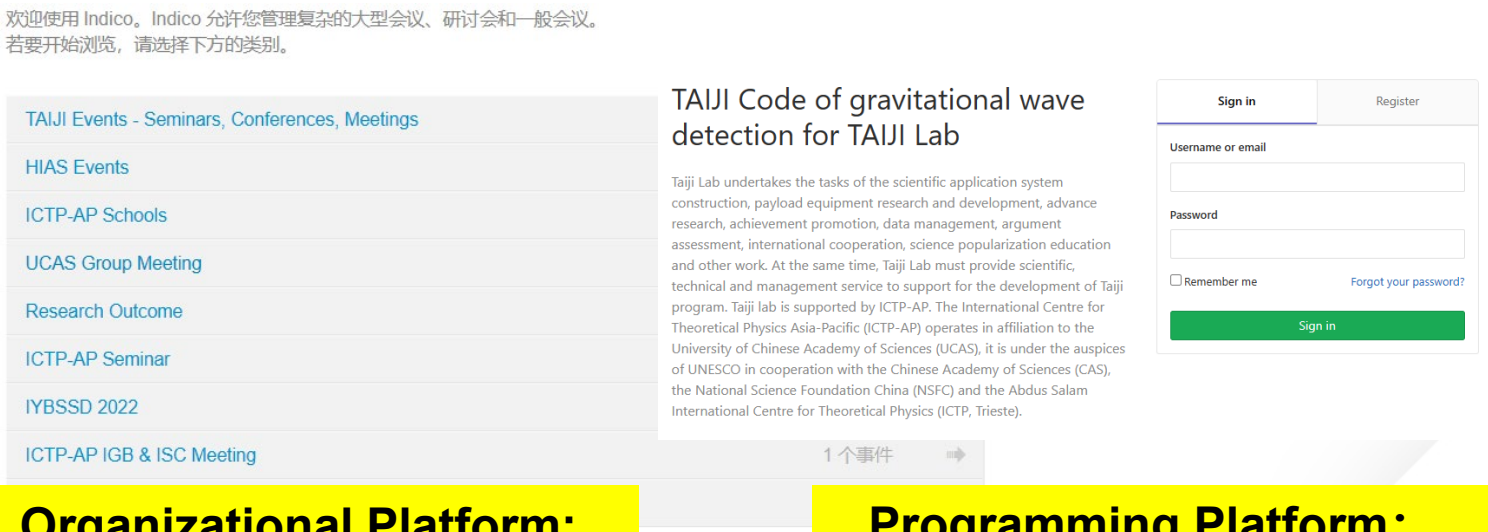
Information Platform

ICTP-AP

Taiji Laboratory



Publication Platform: Public



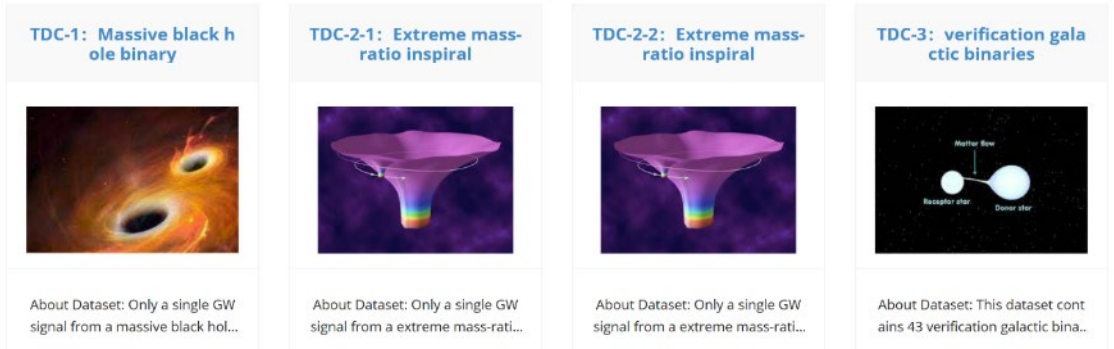
Organizational Platform: Administrative Staff

Programming Platform: Scientific Staff

DATA CHALLENGE

http://taiji-tdc.ictp-ap.org/

Taiji Data Challenge

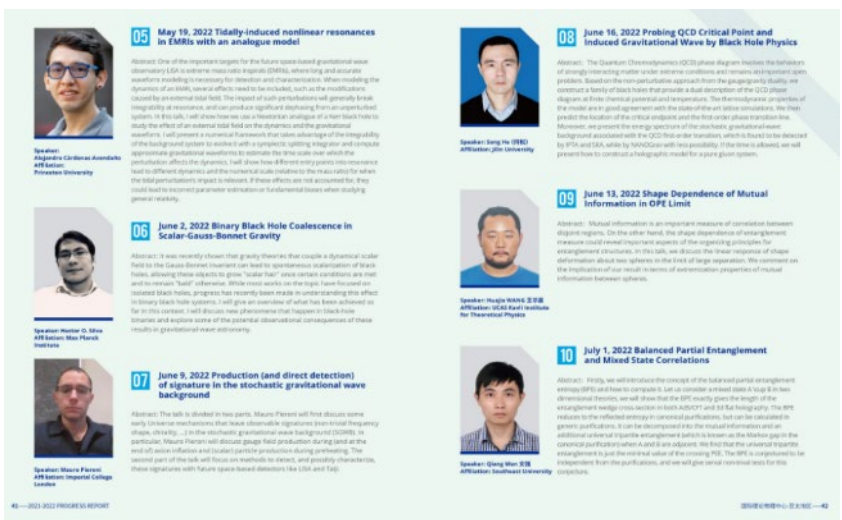


An open data community for global scientific researchers and students

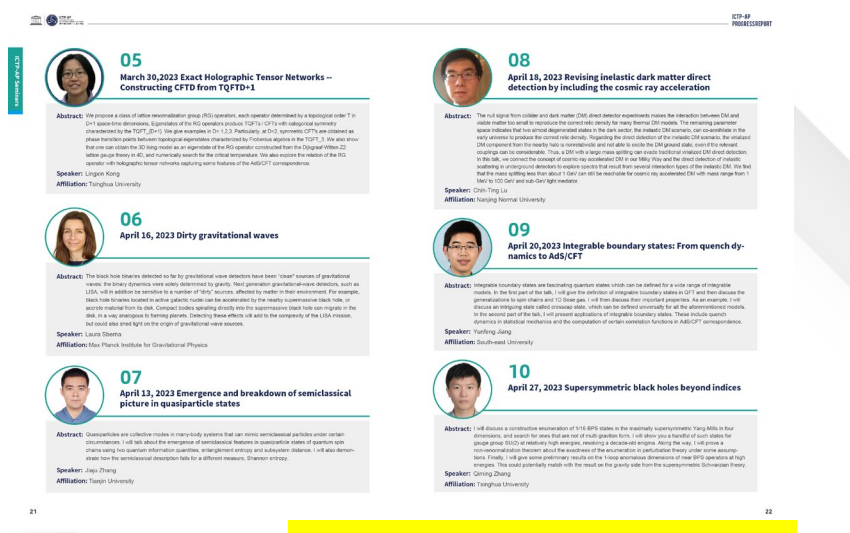
ICTP-AP Seminars

ICTP-AP

Taiji Laboratory



2022 more than 30



2023 more than 40

Summer Schools

ICTP-AP

Taiji Laboratory

2023

2022

2021

2020

2019

Short-term Schools

ICTP-AP

Taiji Laboratory

Pre-SUSY 2021: The Summer School on Supersymmetry and Unification of Fundamental Interactions

2021年8月16日至20日
Asia/Shanghai 时区

输入您的搜索词

Workshops

ICTP-AP

Taiji Laboratory

Year	Workshop	Main Content	Location
2021	ICTP-AP Young Scholars Salon	Aims to broaden scientific horizons, inspire new ideas, and promote innovations in relevant research domains by encouraging young talents with related knowledge backgrounds to discuss frontiers of fundamental science and the latest interdisciplinary scientific issues in a relaxing academic atmosphere.	Beijing
2023	PIFI Visitor: Prof. Francesco Hautmann's Workshop	Academic series workshops in Prof. Hautmann's research area and opened to all the students of UCAS.	Beijing
2023	Workshop on Multi-front Exotic phenomena in Particle and Astrophysics (MEPA 2023)	Focused on the latest theoretical achievements and specialized discussions in the fields of axions, dark photons, fractionally charged particles, magnetic monopoles, and other exotic particles, which are at the forefront of new physics.	Hefei City, Anhui Province
2023	Gravitational Wave Data Exploration: Programming and Analysis Workshop	Cultivate more high-quality talent who can participate in the Space-based GW detection deeply through weekly practice and in-depth discussion.	Online

Taiji Data Workshop

Conferences

ICTP-AP

Taiji Laboratory

Space Science Assembly

China Space Conference

World Laureates Forum

Taiji Consortium Meeting

649th session of Xiangshan Science Conferences

IYBSSD 2022-2023

ICTP-AP

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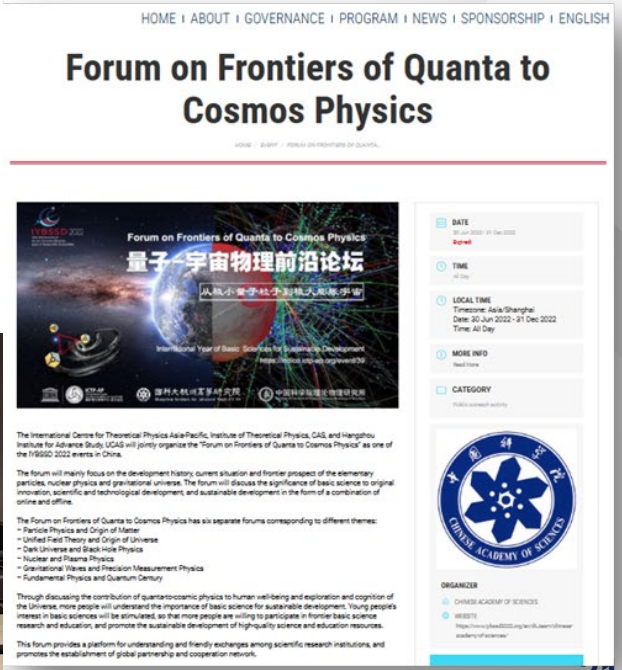
IYBSSD International Year of Basic Sciences for Sustainable Development

Date	Theme	Location	Participants
30 Jun. 2022	Opening Ceremony of the Forum on Frontiers of Quanta to Cosmos Physics	HIAS	30 Lecturers 1.5million Participants Offline & Online
04 Mar. 2023	Gravitational Waves and Precision Measurement Physics	Shandong Univ.	
05 Mar. 2023	Dark Universe and Black Hole Physics	Shandong Univ.	
21 Mar. 2023	Nuclear and Plasma Physics	Fudan Univ.	
16 Apr. 2023	Particle Physics and Origin of Matter	Hunan Univ.	
13-14 May 2023	Unified Field Theory and Origin of Universe	Eco·Economy Senior Talent Hub, Hangzhou	
24 Oct. 2023	Fundamental Physics and Quantum Century	Nanjing Univ.	

2023.12@CERN



International Quantum Year 2025

ICTP-AP

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"**Quantum Century (2025)**" aims to review the interaction among theory, experiment, technology and culture in the development of quantum mechanics in the past century, and look forward to the development of quantum materials, quantum computing and other technologies in the next century, so as to deepen the public's understanding of quantum mechanics.

- **UNESCO is planning to designate 2025 as the "International Quantum Year", and suggests that April 14th should be designated as International Quantum Day from 2021.**

Science Popularizing

ICTP-AP

Taiji Laboratory

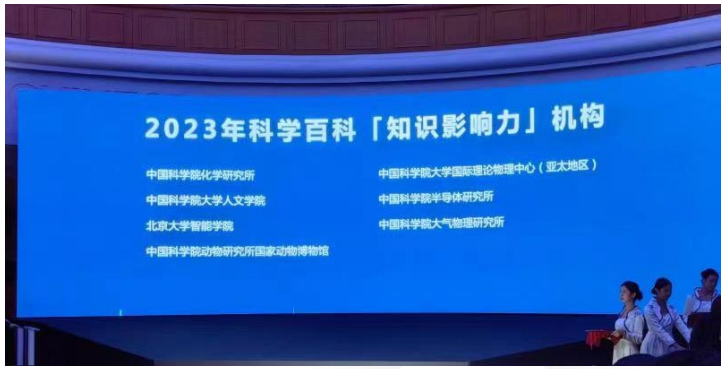
Video

Magazine

《宇宙的最初三分钟》 Introduce to public audience
《The First Three Minutes》 by Steven Weinberg

Live-stream

Tiktok



Chinese Wikipedia

Science Open Day

Helping popularize science and providing intellectual support

PIFI Programs

ICTP-AP has always advocated international exchanges and welcomed visitors from all over the world to carry out academic cooperation.

Visitors to ICTP-AP could apply for the PIFI program which is opened to scientist all over the world and will offer transportation costs, insurance and an allowance.

Chinese Academy of Sciences (CAS) offers a package of international fellowships, collectively called the "CAS President's International Fellowship Initiative (PIFI)", to support highly-qualified international scientists and postgraduate students to work and study at CAS institutions and strengthen their scientific collaboration with CAS researchers.

CAS's policies and funding programmes for international research cooperation

International Students joint with IC-UCAS

ICTP-AP

Taiji Laboratory

In 2023

More than 2000 students from 100 countries in UCAS

Joint together with International College of UCAS (IC-UCAS)

Chinese-Foreign Center for Civilization and Cultural Exchange

School on Frontier and Interdisciplinary Sciences of the Oversea Students from 2014

Scholarship Programs

ICTP-AP

Taiji Laboratory

SCHOLARSHIP PROGRAMS FOR INTERNATIONAL STUDENTS

University of Chinese Academy of Sciences (UCAS) accepts international students through over 20 UCAS colleges and over 100 institutes of Chinese Academy of Sciences (CAS). UCAS provides about 200 master's programs and 160 doctoral programs to international students under the support of different scholarships. All the doctoral programs and over 50 master's programs can be taught in English.

The ANSO Scholarship for Young Talents

The scholarship was launched by the Alliance of International Science Organizations (ANSO) in 2019 with the goal of training and cultivation of young scientists from all over the world. It provides full scholarship to 145 master's and 190 doctoral students every year to pursue postgraduate education at UCAS.

UCAS Scholarship for International Students

UCAS Scholarship consists two types: the full scholarship and the partial. The full scholarship provides tuition waiver, monthly stipend, basic accommodation and medical insurance; while the partial scholarship covers some items of the Full.

Chinese Government Scholarship

Entrusted by the Ministry of Education of the People's Republic of China, UCAS recruits outstanding young graduate students from all over the world and provides full scholarships.

Other Resources of Financial Support

UCAS also accepts applicants with scholarships provided by foreign governments, higher education institutions, international organizations or with self-support.

twas

ANSO

Alliance of International Science Organizations

Way Forward

ICTP-AP

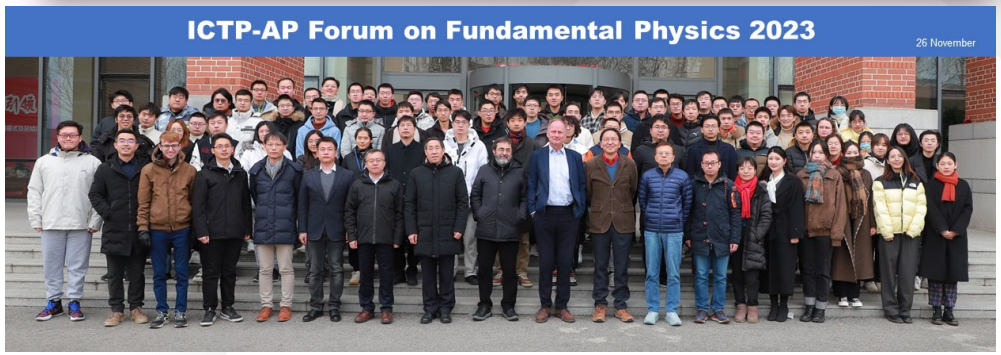
Taiji Laboratory

Assembling and communicating information and knowledge with UNESCO affiliates and building the bridge of cooperation and communication

Develop high-level scientific programs keeping in mind the needs of developing countries, and provide an international forum of scientific contact for scientists from all countries.

Conduct research at the highest international standards and maintain a conducive environment of scientific inquiry for the entire UNESCO community.

2023 IGB & ISC Meeting



THANKS!
Welcome to the growing ICTP-AP

ictp-ap.org

ictp-ap @ucas.ac.cn