SYMPOSIUM ON FRONTIERS OF UNDERGROUND PHYSICS

PROGRAM

Hosted by:
Tsinghua University
Yalong River Hydropower Development Company, Ltd.

October 29-November 2, 2023
Chengdu, China


清華大學
Tsinghua University


CJPL
中国锦屏地下实验室
China Jinping Underground Laboratory


国投
SDIC
雅砻江水电
YALONG HYDRO

PREFACE

Welcome to Chengdu to attend the Symposium on Frontiers of Underground Physics!

Since the 21st century, research on particle physics based on underground experimental platforms and devices has rapidly developed internationally, achieving multiple milestone research results. Important research achievements in cutting-edge fields such as dark matter, neutrinos, and nuclear astrophysics are constantly emerging, bringing more dawn to new physics research. At the same time, the development of cutting-edge theories and experiments in particle physics has greatly promoted the development of underground experimental platforms and devices, as well as particle detection technology, promoting the development of more and more new technologies, methods, and platforms, which have been applied to relevant cutting-edge research.

With this symposium, we intend to illuminate the forefront of underground physics, providing a platform for knowledge-sharing about the latest results in dark matter searches, neutrino experiments, and nuclear astrophysics. We hope to enhance the global understanding of the latest research, methodologies, and results in underground physics, and to strengthen the international cooperation and collaboration in this field. We believe that your unique perspective and expertise will be instrumental in enriching the collaborative spirit of this symposium.

We wish you all the best during your stay in Chengdu!

Organizing Committee

Oct. 29th, 2023

BASIC GUIDE

Conference duration:

Oct. 29th to Nov. 2nd, 2023

Conference location:

1) Conference hotel: Chengdu Charming Yard Nature Nook Hotel (also translated as Chengdu Xanadu Hotel)
   Address: 69 Kehua North Road, Wu Hou District, Chengdu City, Sichuan Province, 610022 China
2) The Conference will be arranged at Narcissus Hall (水仙厅), on the third floor of the hotel.
3) On-site visit: CJPL & Jinping I Dam

Dinning arrangement:

1) Hotel restaurant buffet:
   Location: Provence Western Restaurant (普罗旺斯西餐厅), on the first floor of the hotel.
   Time: breakfast: 7:00~9:00 lunch: 12:00~14:00 dinner: 18:00~20:00
2) Banquet on Oct. 31st: 19:00 at Crystal Hall (水晶厅), on the third floor of the hotel.

For speakers:

1) Each talk takes 30 minutes, with 25 minutes for presentation and 5 minutes for questions and discussions.
2) The latest schedule can be found on the conference website:
   http://indico-cdex.ep.tsinghua.edu.cn/event/150/timetable/#all.detailed
3) Please upload your slides to the conference website in advance for attendees to view. If there are any issues during the upload process, please send us your slides, or contact:

Litao YANG	yanglt@mail.tsinghua.edu.cn	13811596157
Fei GAO	feigao@mail.tsinghua.edu.cn	15611759985

CONTACT

Tsinghua University:

Litao YANG	yanglt@mail.tsinghua.edu.cn	13811596157
Fei GAO	feigao@mail.tsinghua.edu.cn	15611759985
Qian YUE	yueq@mail.tsinghua.edu.cn	13661191913
Zhi ZENG	zengzhi@mail.tsinghua.edu.cn	13911289441

Yalong River Hydropower Development Company, Ltd:

Kai KANG	13982225588
Hengyi GAN	18892859015
Ting LIANG	13908159470

CONFERENCE AGENDA

TIMES	SCHEDULE		CHAIRS
	Oct. 29 Sunday		
9:00-18:00	On-site Registration		
18:00-20:00	Dinner at CYNN Hotel		
	Oct. 30 Monday		
9:00-9:30	Opening Speech		Qian Yue
9:30-10:00	Review of underground laboratories worldwide	Aldo Lanni	
10:00-10:30	Status of CJPL and DURF	Hao Ma	

10:30-11:00	Group Photo & Coffee Break		
11:00-11:30	Status of Korean underground laboratory and AMoRE experiment	Yeongduk Kim	Henry Tsz-King Wong
11:30-12:00	DUNE: The Deep Underground Neutrino Experiment	Kam-Biu Luk	
12:00-12:30	Hyper-Kamiokande: Challenges in Precision Neutrino Physics	Patrick de Perio	
12:30-14:00	Lunch at CYNN Hotel		
14:00-14:30	JUNA investigation of star evolution in deep underground laboratory	Weiping Liu	Shun Zhou
14:30-15:00	Status and Physics of JUNO	Yufeng Li	
15:00-15:30	Neutrino Nucleus Elastic Scattering with sub-keV germanium detectors at the Kuo-Sheng Reactor Neutrino Laboratory	Henry Tsz-King Wong	
15:30-16:00	In Vivo Measurement of Trace Level Internal Radioactivity in a Living Subject Under an Ultra Low Background Enabled by CJPL	Yuanyuan Liu	
16:00-16:30	Coffee Break		
16:30-17:00	Connecting dark matter direct and indirect searches	Yufeng Zhou	Kaixuan Ni
17:00-17:30	Recent development on searching for light and ultralight dark matter	Haipeng An	
17:30-18:00	Status of SuperCDMS SNOLAB experiment	Yan Liu	
18:00-18:30	Recent status and prospects of CDEX dark matter search at CJPL	Litao Yang	
18:30-20:00	Dinner at CYNN Hotel		

Oct. 31 Tuesday

9:00-9:30	The LUX-ZEPLIN Dark Matter Experiment	Theresa Fruth	Fei Gao
9:30-10:00	Direct Dark Matter Search with XENON and DARWIN	Shingo Kazama	
10:00-10:30	PandaX-4T Experiment: Dark Matter and Solar Neutrinos Searches	Qing Lin	
10:30-11:00	Coffee Break		
11:00-11:30	Light Dark Matter Searches with Liquid Xenon	Kaixuan Ni	Shengchao Li
11:30-12:00	The DarkSide Project	Yi Wang	
12:00-12:30	Light Dark Matter Detection at Kamioka Underground Laboratory	Suerfu Burkhant	
12:30-14:00	Lunch at CYNN Hotel		
14:00-14:30	Hunting for Low-mass particle dark matter – some naïve and personal thoughts	Junhui Liao	Kai Chen
14:30-15:00	Pulsar Polarization Array – A New Methodology for Astroparticle Physics	Tao Liu	
15:00-15:30	R&D Progress of Jinping Neutrino Experiment	Zhe Wang	
15:30-16:00	Helicity property of relic neutrino and implications on their detection	Jen-Chieh Peng	
16:00-16:30	Coffee Break		
16:30-17:00	Exploring the Majorana Nature of Massive Neutrinos	Shun Zhou	Yufeng Li
17:00-17:30	Researches of the 0vbb NME and the intermediate states	Chunlin Bai	

17:30-18:00	Projections of Discovery Potentials of Neutrinoless Double Beta Decay Experiments	Hau-Bin Li	Yufeng Li
18:00-18:30	JUNO-0νbb	Gaosong Li	
19:00-21:00	Banquet at CYNN Hotel		

Nov. 1 Wednesday

9:00-9:30	NνDEx experiment	Hao Qiu	Shukui Liu
9:30-10:00	PandaX-4T experiment: Double-weak decays	Shaobo Wang	
10:00-10:30	Overview of the nEXO experiment	Hanwen Wang	
10:30-11:00	Coffee Break		
11:00-11:30	CUPID-China experiment	Mingxuan Xue	Hao Ma
11:30-12:00	LEGEND: The Road Onward Inverted Mass Ordering Region	Aobo Li	
12:00-12:30	CDEX-300ν program for Ge-76 neutrinoless double beta decay search	Li Wang	
12:30-12:40	Summary and ending the symposium	Qian Yue	
12:40-14:00	Lunch at CYNN Hotel		

Nov. 2 Thursday (On-site Visit)

Visit to CJPL

The visit to China Jinping Underground Laboratory (CJPL) will take place on November 2nd.
A preliminary agenda for the visit can be found below. Please book the round-trip train ticket by yourself and let us know if you need help.

8:00-10:55	Chengdu --> Xichang, C57, departure at 8:00, arrive at 10:55
11:00-15:00	CJPL site visit: CJPL-I/II and Jinping Dam.
19:02-21:57	Xichang --> Chengdu, C58, departure at 19:02, arrive at 21:57

The train tickets for November 2nd have been available for purchase from 9:00am, October 19th.
To ensure a seat, please complete the ticket purchase as soon as possible.

We will arrange a bus from the conference hotel to the train station and to CJPL, as follows:
(1) On the morning of November 2nd, a bus from the hotel to the Chengdu Railway Station;
(2) On the morning of November 2nd, a bus from Xichang Railway Station to CJPL;
(3) On the afternoon of November 2nd, a bus from CJPL to Xichang Railway Station;
(4) On the evening of November 2nd, a bus from Chengdu Railway Station to the hotel;
We will also arrange lunch at CJPL and light dinner in Xichang.

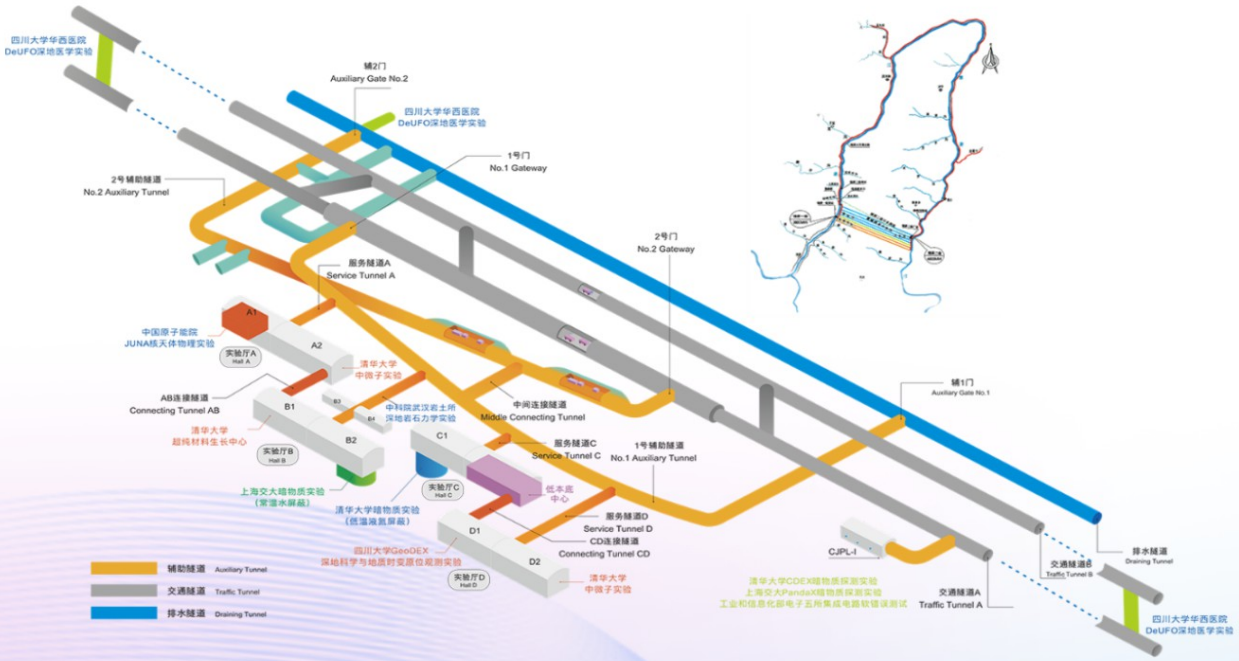
Agenda of the on-site visit

7:00	Departure from hotel to Chengdu South Station
08:00-10:55	High-speed railway C57 to Xichang West Station
11:10-12:40	To Jinping Station #2
12:40-13:10	Lunch at Jinping Station #2
13:10-14:40	Visit CJPL, from Phase 1 to Phase 2
14:40-15:20	Visit Jinping I arch dam
15:20-17:30	Back to Xichang
17:30-18:00	Dinner at Shiweitian Restaurant
18:00-19:00	To Xichang West Station
19:02-21:57	High-speed railway C58 to Chengdu South Station
21:57-22:20	Back to CYNN Hotel

PROJECT OVERVIEW

China Jinping Underground Laboratory (CJPL)

China Jinping Underground Laboratory (CJPL), established in 2010, is located in the middle of the 17.5-kilometer-long Jinping Mountain Tunnel of Yalong River Jinping I Hydropower Station in Liangshan Prefecture, Sichuan Province, as a national major scientific and technological infrastructure, also known as the Deep Underground and Ultra-Low Radiation Background Facility (DURF), a cutting-edge physics experimental facility with ultra-deep underground and ultra-low radiation background. With the completion of the DURF in 2024, CJPL will become the world-class laboratory that has the largest space (330,000m^3), the deepest rock overburden (2400m underground), the lowest cosmic ray flux, the lowest radiation background, and the best comprehensive supports in the world. CJPL is jointly built by Tsinghua University and Yalong River Hydropower Development Co., Ltd. and mainly carries out the research of dark matter, neutrino, nuclear astrophysics, deep-earth medical research, deep-earth rock mechanics, etc.



Jinping I Dam

---Holds the Guinness World Record as the tallest dam in the world.

The Jinping I Dam, constructed by Yalong River Hydropower Development Company, is a double-curvature arch dam with a dam height of 305m, a crest length of 552 meters, a crest width of 16 meters, and a base width of 63 meters. Construction of the dam began in October 2009 and was completed in December 2013, taking a total of 50 months. A staggering 5.72 million cubic meters of concrete were poured during this period, making it the fastest construction speed among similar dam types.