

首届中俄物理教学研讨会
The First Sino-Russian Physics Teaching Seminar

会议手册

Meeting Manual

中国·哈尔滨 俄罗斯·圣彼得堡
Harbin, China St. Petersburg, Russia
2020年12月16日-17日
December 16-17, 2020

首届中俄物理教学研讨会

The First Sino-Russian Physics Teaching Seminar

在“一带一路”倡议背景和《中共中央国务院印发深化新时代教育评价改革总体方案》指导下，基于俄罗斯在科学技术和教育方面强劲的实力和底蕴，为加强中俄物理教学相关领域间的交流与合作、推动我国物理类课程教学改革、提高课程教学质量，由哈尔滨工业大学、圣彼得堡国立大学主办，哈尔滨工业大学物理学院承办的首届中俄物理教学研讨会定于2020年12月16日到12月17日召开。此次会议将采用线上与线下相结合的方式，邀请了中俄物理教学著名专家、老师通过专题报告介绍中俄物理类课程的教学改革进展、研究热点和未来发展方向，从不同角度研讨物理类课程教学前沿科学和关键问题。

一、会议基本信息

主办单位：哈尔滨工业大学、圣彼得堡国立大学

承办单位：哈尔滨工业大学物理学院

会议时间：2020年12月16日到12月17日

会议地点：线上（Microsoft Teams）

线下（哈尔滨工业大学物理学院 717 会议室）

（圣彼得堡国立大学物理学院）

二、会议日程

12月16日：中俄物理类专业课程教学会议交流

12月17日：中俄基础物理课程教学会议交流

三、会议议题

- 1、物理类专业课程教学改革研究
- 2、中俄物理类专业课程教学内容探讨
- 3、基础物理课程教学改革研究
- 4、中俄基础物理课程教学内容探讨
- 5、物理实验类课程教学改革研究
- 6、其他物理教学相关事宜

四、会议组委会

徐殿国 哈尔滨工业大学副校长、IEEE 会士

Marina Lavrikova 圣彼得堡国立大学学术和教学高级副校长

Sergey Mikushev 圣彼得堡国立大学科研副校长

Sergey Andryushin 圣彼得堡大学国际事务副校长

Aleksandr Babich 圣彼得堡大学学生事务副校长

沈毅 哈尔滨工业大学校长助理、本科生院常务副院长

范洪波 哈尔滨工业大学国际合作部常务副部长

刘宏伟 哈尔滨工业大学本科生院副院长

赵雅琴 哈尔滨工业大学本科生院副院长

顾建政 哈尔滨工业大学国际教育学院院长

程东明 哈尔滨工业大学物理学院党委书记

田浩 哈尔滨工业大学物理学院执行院长

Alexey Titov 圣彼得堡国立大学物理学院副院长

张宇 哈尔滨工业大学物理学院副院长

Vladimir Shabaev 圣彼得堡大学物理学院科研副院长

Marina Shelyapina 圣彼得堡大学物理学院教学副院长

Aleksandr Shchekin 圣彼得堡国立大学物理系统计物理系主任、
俄罗斯科学院联系人

霍雷 哈尔滨工业大学教授、教育部大学物理教指委委员

孟庆鑫 哈尔滨工业大学物理学院院长助理

五、会议地方筹备委员会

主任委员：李均

副主任委员：袁承勋 Elena Aksenova

委员：王晓鸥 Nikolay Timofeev 李俊庆 Nikolay Tsvetkov

黄丽 Mikhael Ioffe 杨庆鑫 Tatiana Suslina 曹永印

Aleksandr Baraban 王莹 Sergey Yakovlev 刘璐璐

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The First Sino-Russian Physics Teaching Seminar

Under the background of the Belt and Road Initiative and the guidance of the General Plan issued by the CPC Central Committee and the State Council to Deepen the Reform of Education Evaluation in the New Era, based on Russia's strong strength and heritage in science, technology and education, in order to strengthen exchanges and cooperation between China and Russia in the field of physics teaching, promote the reform of physical courses teaching, improve the quality of physical courses teaching, organized by Harbin Institute of Technology and St. Petersburg State University, sponsored by School of Physics, Harbin Institute of Technology, the First Sino-Russian Physics Teaching Seminar will be held from December 16 to December 17, 2020.

The seminar will adopt a combination of online and offline. Through inviting well-known experts and teachers in physics teaching in China and Russia to introduce the progress of teaching reform, research hot spots and future development direction of Physics courses in China and Russia through special reports, the seminar will discuss the cutting-edge science and key issues of physics course teaching from different views.

1. The basic information of the seminar

Organizers: Harbin Institute of Technology, St. Petersburg State University

Sponsored by: School of Physics, Harbin Institute of Technology

Meeting Date: December 16th to 17th, 2020

Meeting Place: Online (Microsoft Teams)

Offline (Harbin Institute of Technology, St. Petersburg State University)

2. The agenda of the seminar

December 16th: Exchange of teaching sessions on professional physics courses between China and Russia

December 17th: Exchange of teaching sessions on basic physics courses between China and Russia

3. The topic of the seminar

- The teaching reform research of professional physics course
- The teaching content of Chinese and Russian professional physics courses
- The teaching reform research of basic physics course
- The teaching content of Chinese and Russian basic physics courses
- The teaching reform research of physics experimental course
- Other physics teaching related matters

4. Organizing Committee of the seminar

Organizing Committee Members		
Member	Position	Organization
Dr. Xu Dianguo	Chair	HIT
Dr. Marina Lavrikova	Co-Chair	SPBU
Dr. Shen Yi	Committee member	HIT
Dr. Sergey Mikushev	Committee member	SPBU
Dr. Fan Hongbo	Committee member	HIT
Dr. Sergey Andryushin	Committee member	SPBU
Dr. Gu Jianzheng	Committee member	HIT
Dr. Aleksandr Babich	Committee member	SPBU
Dr. Liu Hongwei	Committee member	HIT
Dr. Alexey Titov	Committee member	SPBU
Dr. Zhao Yaqin	Committee member	HIT
Dr. Vladimir Shabaev	Committee member	SPBU
Dr. Tian Hao	Committee member	HIT
Dr. Marina Shelyapina	Committee member	SPBU
Dr. Zhang Yu	Committee member	HIT
Dr. Aleksandr Shchekin	Committee member	SPBU
Dr. Huo Lei	Committee member	HIT
Dr. Meng Qinxin	Committee member	HIT

The brief introduction of Chinese members in the Organizing Committee of the seminar:

- **Xu Dianguo** Vice President of Harbin Institute of Technology, IEEE fellow
- **Shen Yi** Assistant President of Harbin Institute of Technology, Executive Vice President of the Undergraduate Institute
- **Fan Hongbo** Executive Vice-Minister, Department of International Cooperation, Harbin Institute of Technology
- **Gu Jianzheng** Dean, School of International Education, Harbin Institute of Technology

- **Liu Hongwei** Vice Dean, Undergraduate School, Harbin Institute of Technology
- **Zhao Yaqin** Vice Dean, Undergraduate School, Harbin Institute of Technology
- **Tian Hao** Executive Dean, School of Physics, Harbin Institute of Technology
- **Zhang Yu** Vice Dean, School of Physics, Harbin Institute of Technology
- **Huo Lei** Harbin Institute of Technology Professor, Ministry of Education, university physics teaching committee member
- **Meng Qingxin** Assistant Dean, School of Physics, Harbin Institute of Technology

The brief introduction of Russian members in the Organizing Committee of the seminar:

- **Marina Lavrikova** Senior Vice-Rector for Academic Activities and Teaching Methods, St. Petersburg University
- **Sergey Mikushev** Vice-Rector for Research, St. Petersburg University
- **Sergey Andryushin** Vice-Rector for International Affairs, St. Petersburg University
- **Aleksandr Babich** Vice-Rector for Student Affairs and Admissions, St. Petersburg University
- **Alexey Titov** Vice Dean, Faculty of Physics, St. Petersburg University
- **Vladimir Shabaev** Vice Dean for Research, Faculty of Physics, St. Petersburg University
- **Marina Shelyapina** Vice Dean for Teaching Methods, Faculty of Physics, St. Petersburg University
- **Aleksandr Shchekin** Head of Department of Statistical Physics, Corresponding member of the Academy of Sciences of Russia, Faculty of Physics, St. Petersburg University

5. Local Preparatory Committee for the Conference

Local Organizing Committee Members (HIT)		
Member	Position	Organization
Dr. Li Jun	Chair	HIT
Dr. Yuan Chengxun	Co-Chair	HIT
Dr. Wang Xiaou	Committee member	HIT
Dr. Li Junqing	Committee member	HIT
Dr. Yang Qingxin	Committee member	HIT
Dr. Cao Yongyin	Committee member	HIT
Dr. Huang Li	Committee member	HIT
Dr. Wang Ying	Committee member	HIT
Liu LuLu	Committee member	HIT

Local Organizing Committee Members (SPBU)		
Member	Position	Organization
Dr. Elena Aksenova	Co-Chair	SPBU
Dr. Nikolay Timofeev	Committee member	SPBU
Dr. Nikolay Tsvetkov	Committee member	SPBU
Dr. Mikhael Ioffe	Committee member	SPBU
Dr. Tatiana Suslina	Committee member	SPBU
Dr. Aleksandr Baraban	Committee member	SPBU
Dr. Sergey Yakovlev	Committee member	SPBU

会议日程概览

12月16日

15:00-15:30 首届中俄物理教学研讨会开幕式

Opening Ceremony of the First Sino-Russian Physics Teaching Seminar

15:30-17:10 首届中俄物理教学研讨会第一分论坛

First Forum of the First Sino-Russian Physics Teaching Seminar

17:20-19:20 首届中俄物理教学研讨会第二分论坛

Second Forum of the First Sino-Russian Physics Teaching Seminar

12月17日

15:00-17:00 首届中俄物理教学研讨会第三分论坛

Third Forum of the First Sino-Russian Seminar on Physics Teaching

17:10-19:10 首届中俄物理教学研讨会第四分论坛

Fourth Forum of the First Sino-Russian Seminar on Physics Teaching

19:10-19:30 首届中俄物理教学研讨会闭幕式

Closing Ceremony of the First Sino-Russian Physics Teaching Seminar

Part I: December 16, 2020 The Sino-Russian Physics Teaching Seminar in professional physics courses

No.	Schedule (St. Petersburg Time)	Schedule (Harbin Time)	Session Chairman	Content	Speaker
				Opening Ceremony	
	10:00 – 10:30	15:00 – 15:30	LI Jun HIT	Welcoming speech from Chinese side	XU Dianguo HIT
				Welcoming speech from Russian side	Marina Lavrikova SPBU
				Take photo	
1	10:30 – 10:50	15:30 – 15:50		LI Jun HIT	Joint education program “Applied Physics” of St. Petersburg State University (SPBU) and Harbin Institute of Technology (HIT): Current Status and Prospects
2	10:50 – 11:10	15:50 – 16:10	Home Series of ‘Musical Sounds’ for University Physics Experiments in China		LI Junqing HIT
3	11:10 – 11:30	16:10 – 16:30	Mathematical Physics in the framework of educational system for students of joint BSc. Program in Physics of St. Petersburg State University (SPBU) and Harbin Institute of Technology (HIT)		LYALINOV Mikhail SPBU
4	11:30 – 11:50	16:30 – 16:50	The Teaching Experience and Exploration of Online Class of College Physics in NPU		FAN Fei Northwestern Polytechnical University
5	11:50 – 12:10	16:50 – 17:10	Statistical Physics and Thermodynamics		AKSENOVA Elena SPBU
	12:10 – 12:20	17:10 – 17:20	Coffee Break		
6	12:20 – 12:40	17:20 – 17:40	TITOV Alexei SPBU	Electronic system of support for mass multilevel education in physics	Alexander Chirtsov St. Petersburg State Electrical University
7	12:40 – 13:00	17:40 – 18:00		Informationized Technology Applications in Experimental Physics Education	LIU Shengguang Dalian University of Technology
8	13:00 – 13:20	18:00 – 18:20		Theoretical mechanics for physics students: a structure of the lecture course	TELNOV Dmitry SPBU

9	13:20 – 13:40	18:20 – 18:40		The Exploration and Practice of Teaching Model Reform on College Physics for International Students	YANG Qingxin HIT
10	13:40 – 14:00	18:40 – 19:00		What do electrodynamics and subnuclear physics have in common	MANIDA Sergei SPBU
11	14:00 – 14:20	19:00 – 19:20		Fundamentals of polymers and liquid crystals	TSVETKOV Nikolay SPBU

Part II: December 17, 2020 The Sino-Russian Physics Teaching Seminar in fundamental physics courses

No.	Schedule (St. Petersburg Time)	Schedule (Harbin Time)	Session Chairman	Content	Speaker
1	10:00 – 10:20	15:00 – 15:20	MANIDA Sergei SPBU	China Undergraduate Physics Tournament~CUPT in HIT	Yuan Chengxun HIT
2	10:20 – 10:40	15:20 – 15:40		Numerical Methods in Physics	YAREVSKY Evgeny SPBU
3	10:40 – 11:00	15:40 – 16:00		Online Java-Script Generator of Interactive Models in Physics	Alexander Chirtsov St. Petersburg State Electrical University
4	11:00 – 11:20	16:00 – 16:20		Atomic Physics: Development and Philosophical Problems	PASTOR Alexander SPBU
5	11:40 – 12:00	16:40 – 17:00		Exploration of PPBL model in physical experiments courses	WANG Chunliang Northeast Normal University
	12:00 – 12:10	17:00 – 17:10	Coffee Break		
6	12:10 – 12:30	17:10 – 17:30	YANG Qingxin HIT	Quantum mechanics for physics students	TUPITSYN Ilya SPBU
7	12:30 – 12:50	17:30 – 17:50		Education in Physics at Saint Petersburg State University	SHELYAPINA Marina SPBU
8	12:50 – 13:10	17:50 – 18:10		The present condition and prospects of College Physics teaching in Harbin Engineering University	ZHAO Wenhui Harbin Engineering University

9	13:10 – 13:30	18:10 – 18:30		Basis of Plasma Physics	TIMOFEEV Nikolai SPBU
10	13:30 – 13:50	18:30 – 18:50		Fourier optics	SMIRNOV Valery SPBU
11	13:50 – 14:10	18:50 – 19:10		Discussion on the teaching mode of "light interference" section in College Physics	CAO Yongyin HIT