

**INTERNATIONAL SUMMER SCHOOL**  
**MECHANICS IN NEW SPACE VEHICLES**

Jul 31st – Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R. China

**GENERAL INFORMATION**

Mechanics is the engineering science bridging basic science and future technology. Mechanics in New Space Vehicles International summer school offers a variety of latest lectures and seminar talks about mechanics in research, design and applications of new space vehicles. Participants will be enriched specifically in the fields of integrated design of space structures, dynamics and control, high performance materials for flight mission, health monitoring of structures, etc. via theory and group research projects. It is an excellent opportunity for participants to get access to frontiers in mechanics, to work together tackling challenges, and to make academic friends worldwide. Due to COVID-19, only online option is available for international participants, others may participate online or offline.

**ATTENDANCE REQUIREMENTS**

Participants in undergraduate or graduate level, with background in mechanics, aerospace engineering, mechanical engineering, materials science, applied mathematics, etc. are expected. All participants must have a good command of English. Some lectures will be given in Russian/Chinese with translation.

**LECTURES AND TALKS**

The summer school offers three lectures and twelve seminar talks. Lecturers and speakers are invited from top institutions in Russia and China, including Lomonosov Moscow State University, Samara State University, Chinese Academy of Sciences, Harbin Institute of Technology, Tongji University, South China University of Technology, and Xiamen University.

<b>Lecturer/ Speaker</b>	<b>Institution</b>	<b>Topic (preliminary)</b>	<b>Units (50 mins/unit)</b>
Prof. B.M.Морозов	Lomonosov Moscow State University, Russia	Stability of time-varying systems	8 (lecture)
Prof. A.B.Самсонов	Lomonosov Moscow State University, Russia	Dynamics and kinematic stability of multibody systems	8 (lecture)

Prof. A.П.Алексеев	Samara State University, Russia	Design of Aircraft structures	8 (lecture)
Prof. B.М.Морозов	Lomonosov Moscow State University, Russia	Kinematic stability analysis of certain time-varying systems	2 (talk)
Prof. A.В.Самсонов	Lomonosov Moscow State University, Russia	Kinematic stability analysis of rigid flexible coupled orbiting spacecraft systems	2 (talk)
Prof. A.П.Алексеев	Samara State University, Russia	Stability analysis of Spacecraft orbit in coupled multi-physics	2 (talk)
Prof. Zhengming Huang	Tongji University, China	Advanced composite materials and structural strength	4 (talk)
Prof. Jinsong Leng	Harbin Institute of Technology, China	Design and applications of smart materials and structures	4 (talk)
Prof. Junzhi Cui	Chinese Academy of Sciences, China	Advanced computational methods and engineering applications	2 (talk)
Prof. Xiaohu Yao	South China University of Technology, China	Impact and failure mechanics of composite materials	4 (talk)
Prof. Xinlin Ji	Xiamen University, China	Structural Health Monitoring and applications	4 (talk)

### GROUP RESEARCH PROJECT

Participants will be grouped into 6 teams or more, each with 7-10 members, to work on a project on structural design and safety assessment of space vehicles in composite materials. Each group may select one from four areas: general design of space vehicles, structural dynamics and control, computation of strength and service life, structural health monitoring of space vehicles. Instructors are available online or offline.

### PROGRAM DATES AND TIMES

	Week 1 (8.1—8.7)						Week 2 (8.8—8.14)					
	Mon	Tue	Wed	Thur	Fri	Sat	Mon	Tue	Wed	Thur	Fri	Sat
M	Seminar		Lecture		Group Research	Tour	Lecture		Seminar	Seminar	Def- ense	Poster
A	Lecture		Seminar				Seminar		Group Research	Group Research		
							Group Research					

(Registration: July 31th, 2022)