



## Campus of IFT-UNESP - São Paulo, Brasil



**BARBARA DIETZ**  
I. for Basic Science (IBS),  
Republic of Korea  
*Non-Relativistic and Relativistic  
Quantum Chaos*



**ALEXANDER ALTLAND**  
U. of Cologne, Germany  
*Quantum Chaos in the SYK model*



**THOMAS GUHR**  
U. of Duisburg-Essen, Germany  
*Random Matrix Theory Applications from  
Single to Many-Body Quantum Chaos*



**HORACIO PASTAWSKI**  
U. Nacional de Córdoba-CONICET,  
Argentina  
*Dynamical Quantum Chaos in Many-Body  
Systems: An experimental quest for the  
origin of irreversibility from Loschmidt  
Echoes to Out of Time Order Correlators*



**MARTIN SIEBER**  
U. of Bristol, UK  
*Semiclassical Theory Approach in  
Quantum Chaos*



**DARIO ROSA**  
I. for Basic Science (IBS),  
Republic of Korea  
*Aspects of Many-Body  
Quantum Chaos*



**JUAN DIEGO URBINA**  
U. Regensburg,  
Germany  
*The Semiclassical Approach to Discrete Quantum  
Fields and Many-Body Interference in Fock Space*

August 21 – September 1, 2023

# SCHOOL ON QUANTUM CHAOS

Quantum chaos focuses on the quantum manifestations of classical chaos. A characteristic of classical chaos is the exponential sensitivity of the dynamics with respect to infinitesimal changes in the initial conditions. Thus, to classify classical dynamics it is sufficient to follow phase space trajectories starting infinitesimally close to each other and to determine the evolution of their distances with respect to each other with time. Because of the uncertainty relation, this is no longer possible in the corresponding quantum system.

The focus of research within the field of quantum chaos has been extended to relativistic quantum systems and to many-body quantum systems with focus on random matrix theory and the semiclassical approach. In distinction to single-particle systems, many-body systems like atomic nuclei do not have a classical analogue. In recent years different measures of chaos and models have been developed. Here, a prominent model is the Sachdev-Ye-Kitaev model which serves as a paradigm for the study of quantum chaos in strongly interacting many-body systems.

The school is aimed at PhD students, post-docs and outstanding master students and the first part will provide a survey of single- and many-body quantum chaos and applications based on random-matrix theory and the semiclassical approach. The second part of the school will focus on current aspects of research in the context of many-body quantum chaos.

*There is no registration fee and limited funds are available for travel and local expenses.*

**Application deadline: June 11, 2023**

**Online application and more information:**

**[www.ictp-saifr.org/qc2023/](http://www.ictp-saifr.org/qc2023/)**



### ORGANIZERS

**Hilda Cerdeira**  
(IFT-UNESP, Brazil)

**Barbara Dietz-Pilatus**

(Institute for Basic Science (IBS), Republic of Korea)

### ICTP-SAIFR STEERING COMMITTEE

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Hugo Aguilaniu - President-Director of Serrapilheira I.

Luiz Davidovich - President of Brazilian Acad. of Science

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