

# School & Workshop

# Markov Partitions and Young Towers in Dynamics



**15 November - 10 December 2021**  
**Online**

Further information:  
<http://indico.ictp.it/event/9684/smr3642@ictp.it>  
Activity Secretary: S. Henningsen

In the 1970s, Sinai, Ruelle, and Bowen, developed groundbreaking ideas and techniques to apply results of Ergodic Theory to Dynamical Systems. In particular they showed that smooth Uniformly Hyperbolic systems admit Markov Partitions, which makes it possible to apply methods from statistical mechanics to describe the statistical properties of the system through the construction of a particular class of invariant measures which are now called Sinai-Ruelle-Bowen (SRB) measures.

There has been a huge progress in extending the results of Sinai, Ruelle, and Bowen, to Nonuniformly Hyperbolic systems, including systems with discontinuities/singularities. At the end of the 1990s, Lai-Sang Young introduced a construction, known as Young Tower, based on constructing an induced uniformly hyperbolic system. Around 2013, Sarig generalised the original Sinai-Ruelle-Bowen approach to construct infinite Markov Partitions. Both approaches have proved powerful and have been used to construct SRB measures and to study their statistical properties in a number of classes of dynamical systems. Both approaches are also technically non-trivial and, notwithstanding their underlying connections, most researchers have developed an expertise in either one or the other. The main purpose of this event is to bring together experts in both areas in order to create opportunities to understand better the similarities and differences between them, and the advantages and disadvantages of the two approaches.

### Schedule:

The entire event will be held online with 2 mini-courses by José Ferreira Alves on Young Towers and Yuri Lima on Markov Partitions. These mini-courses will be introductory and require only some familiarity with Uniformly Hyperbolic Dynamics and will be spread out over a period of 2 to 3 weeks, and be accompanied by some additional tutorial sessions, in order to give participants time to actually study the material and consolidate their knowledge. The mini-courses will then be followed by a week of research level seminars describing recent results on these topics.

### How to apply:

Online application:  
<http://indico.ictp.it/event/9684/>

Female scientists are encouraged to apply.

### Registration:

There is no registration fee.

### Directors:

**José Ferreira Alves**  
(Porto, Portugal)  
**Yuri Lima**  
(UFC, Brazil)  
**Stefano Luzzatto**  
(ICTP, Italy)

### Mini-Course Lecturers:

**José Ferreira Alves**  
(Porto, Portugal)  
**Yuri Lima**  
(UFC, Brazil)

### Speakers:

**Jérôme Buzzi**  
(Paris, France)  
**Sylvain Crovisier**  
(Paris, France)  
**Peyman Eslami**  
(Rome, Italy)  
**Carlos Matheus**  
(Paris, France)  
**Snir Ben Ovadia**  
(Weizmann, Israel)  
**Yakov Pesin**  
(Penn State, USA)  
**Vilton Pinheiro**  
(UFBA, Brazil)  
**Omri Sarig**  
(Weizmann, Israel)  
**Agnieszka Zelerowicz**  
(Maryland, USA)  
**Hong-Kun Zhang**  
(Amherst, USA)

### Deadline:

**1 November 2021**

