



**ICTP** | International Centre for Theoretical Physics  
**SAIFR** | South American Institute for Fundamental Research



*Mission: To be among the world-leading theoretical physics centers in research, training and outreach, and serve as a stable international scientific hub for all of South America*



# Motivation

- Almost all of present technology is based on theoretical physics from the previous century, and tomorrow's technology will certainly require knowledge of current advances in theoretical physics.
- Theoretical physics centers such as the ICTP in Trieste and the KITP in Santa Barbara organize interdisciplinary programs that bring together students and researchers from all over the world to share recent discoveries and develop applications.
- Although there are dozens of theoretical physics centers in North America, Europe and Asia, there are none in South America with the same impact as, for example, the Institute for Pure and Applied Mathematics (IMPA) in Rio de Janeiro in mathematics.



# Why ICTP-SAIFR in São Paulo?

- **ICTP-SAIFR** was created in 2012 as the first partner institute of **ICTP** in Trieste in collaboration with **IFT-UNESP** and **FAPESP**.
- Founded in 1952, IFT-UNESP is one of the oldest and most prestigious graduate schools in theoretical physics in South America.
- The São Paulo state research funding agency FAPESP is the most stable and well-funded agency in South America.
- IFT-UNESP is centrally located near the largest South American airport and close to several large top-ranked universities.





# Brief History of ICTP-SAIFR



IFT 1952



IFT-UNESP 1987



ICTP-UNESP MoU 2010



Perimeter MoU 2015



FAPESP 1962

SIMONS  
FOUNDATION

Simons 1994



FAPESP grants '11,'16,'22



Serrapilheira 2017



ICTP 1964



Perimeter 1999



Opening Ceremony 2012



Instituto Principia 2017



UNESP 1976



UNESP Barra Funda 2009



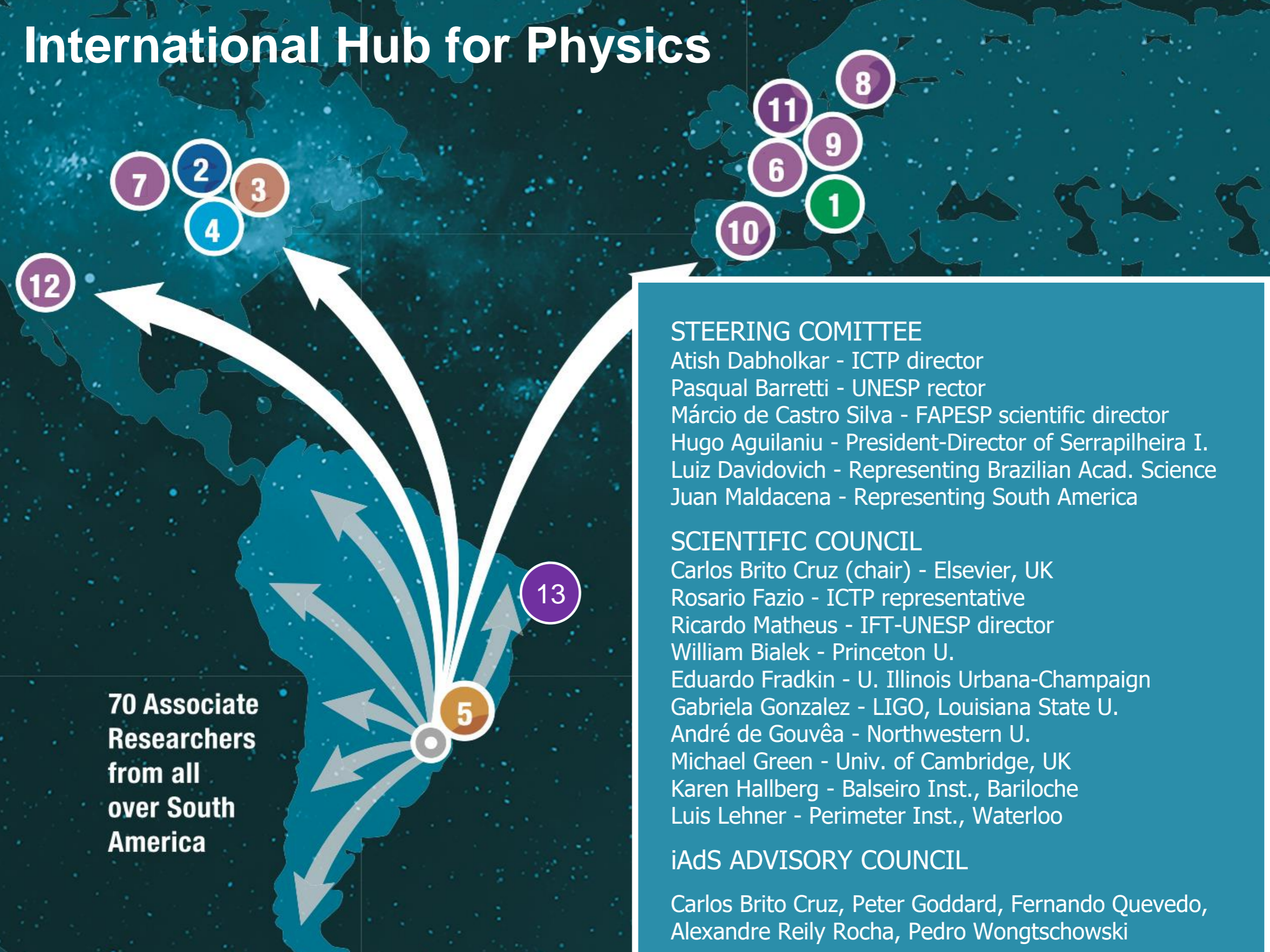
Simons Fellows 2014



Amigos do SAIFR 2021



# International Hub for Physics



**70 Associate  
Researchers  
from all  
over South  
America**

## STEERING COMMITTEE

Atish Dabholkar - ICTP director  
Pasqual Barretti - UNESP rector  
Márcio de Castro Silva - FAPESP scientific director  
Hugo Aguilaniu - President-Director of Serrapilheira I.  
Luiz Davidovich - Representing Brazilian Acad. Science  
Juan Maldacena - Representing South America

## SCIENTIFIC COUNCIL

Carlos Brito Cruz (chair) - Elsevier, UK  
Rosario Fazio - ICTP representative  
Ricardo Matheus - IFT-UNESP director  
William Bialek - Princeton U.  
Eduardo Fradkin - U. Illinois Urbana-Champaign  
Gabriela Gonzalez - LIGO, Louisiana State U.  
André de Gouvêa - Northwestern U.  
Michael Green - Univ. of Cambridge, UK  
Karen Hallberg - Balseiro Inst., Bariloche  
Luis Lehner - Perimeter Inst., Waterloo

## iAdS ADVISORY COUNCIL

Carlos Brito Cruz, Peter Goddard, Fernando Quevedo,  
Alexandre Reily Rocha, Pedro Wongtschowski



# nature INDEX 2016 RISING STARS

NATURE, VOL. 535, ISSUE NO. 7613 (JULY 28, 2016)

UNESPS's research strengths are in **physics and astronomy**. Its Institute for Theoretical Physics was founded in 1951, predating the university itself. It also hosts the **ICTP South American Institute for Fundamental Research**, an offshoot of the International Centre for Theoretical Physics in Trieste, Italy. [...]

2015	Institution	WFC 2015	AC 2015	Change in WFC 2012–2015	Change in WFC 2012–2015 (%)
1	São Paulo State University (UNESP), Brazil	23.52	112	12.31	109.87
2	National Scientific and Technical Research Council (CONICET), Argentina	38.93	359	7.51	23.92
3	National Autonomous University of Mexico (UNAM), Mexico	46.70	334	7.45	18.97
4	University of São Paulo (USP), Brazil	49.12	315	7.37	17.64
5	Center for Scientific Studies (CECs), Chile	7.98	17	5.32	200.64
6	University of the Republic (URUGUAY)	7.99	20	5.22	189.06

*Highest ranking 7 by CAPES for IFT after the creation of ICTP-SAIFR*

*2021 John Wheatley Award from the American Physical Society for ICTP-SAIFR*





**ICTP** | International Centre for Theoretical Physics  
**SAIFR** | South American Institute for Fundamental Research

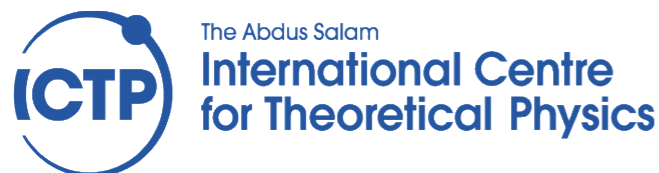
## Public financing



Staff and professor salaries + infrastructure  
**US\$ 500K/year**



Financing of schools, workshops and fellowships  
**US\$ 700K/year**



Joint schools and workshops  
**US\$ 30K/year**



Fellowships for graduate students and researchers  
**US\$ 100K/year**



# Private financing (via Amigos do SAIFR)

**SIMONS**  
FOUNDATION

Fellowships for two tenure-track professors.  
**US\$ 60K/year**

 serrapilheira

Programs involving physics and biology  
**US\$ 40K/year**

 **PERIMETER**  
**INSTITUTE**

Exchange program involving joint professor  
**US\$ 50K/year**

**UCLA** Mani L. Bhaumik Institute  
for Theoretical Physics

Exchange program involving joint professor  
**US\$ 30K/year**

 **+ OTHERS**

Donations and endowment from private individuals  
**US\$ 60K/year**



# Researchers on ICTP-SAIFR grant

## Complex Systems with applications to biology

M.Aguiar (Unicamp)  
H.Gomez (IFT-UNESP)  
R.Kraenkel (IFT-UNESP)  
[R.Martinez-Garcia \(CASUS\)](#)  
J.Onuchic (Rice U.)  
P.Prado (IB-USP)  
P.Ronceray (U. Marseille)

## Condensed matter

D.Liarte (IFT-UNESP)  
J.Marino (Mainz),  
E.Miranda (Unicamp)  
V.Quito (USP São Carlos)  
A.Ramires (Paul Scherrer)  
A.Rocha (IFT-UNESP)  
[D.Rosa \(IFT-UNESP\)](#)  
S. Salinas (IFUSP)

## Particle Physics

O.Éboli (IFUSP)  
R.Funchal (IFUSP)  
M.Guzzo (Unicamp)  
G.Krein (IFT-UNESP)  
R.Matheus (IFT-UNESP)  
S.Novaes (IFT-UNESP).

## Cosmology

R.Abramo (IFUSP)  
M.Lima (IFUSP)  
V.Miranda (Stony Brook),  
R.Porto (DESY Hamburg)  
[R.Rosenfeld \(IFT-UNESP\)](#)

## Astrophysics

E.Bertuzzo (U. Modena)  
C.Sheng Fong (UFABC)  
F.Iocco (U. Napoli),  
R.Nemmen (IAG-USP)  
E.Dal Pino (IAG-USP)  
F.Queiroz (IIP-Natal)  
[R.Sturani \(IFT-UNESP\);](#)

## Field Theory

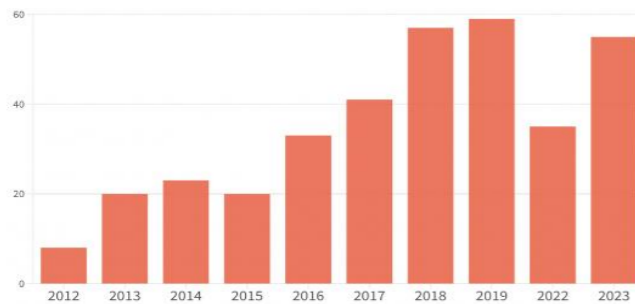
[N. Berkovits \(IFT-UNESP\)](#)  
A.Mikhailov (IFT-UNESP)  
H.Nastase (IFT-UNESP)  
D.Trancanelli (U. Modena)  
[P.Vieira \(Perimeter/IFT\)](#)



Every year, ICTP-SAIFR organizes dozens of international schools for graduate students, workshops for researchers, and outreach activities for the general public and for high-school teachers and students.

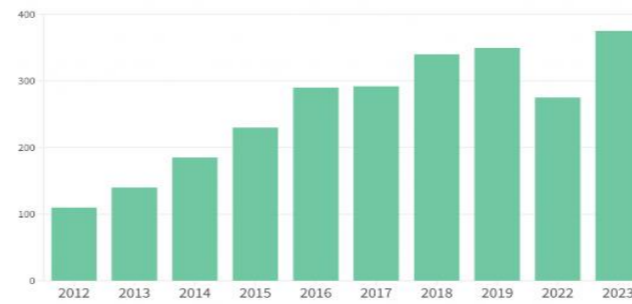
350

Activities



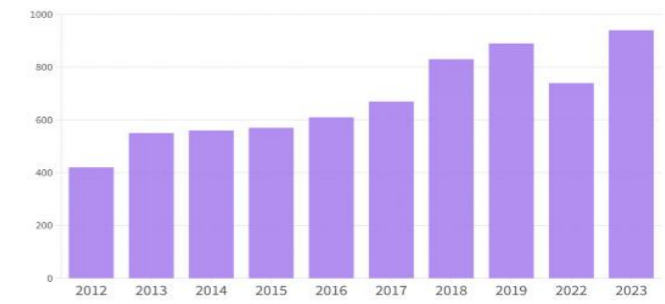
2587

Visiting Scientists

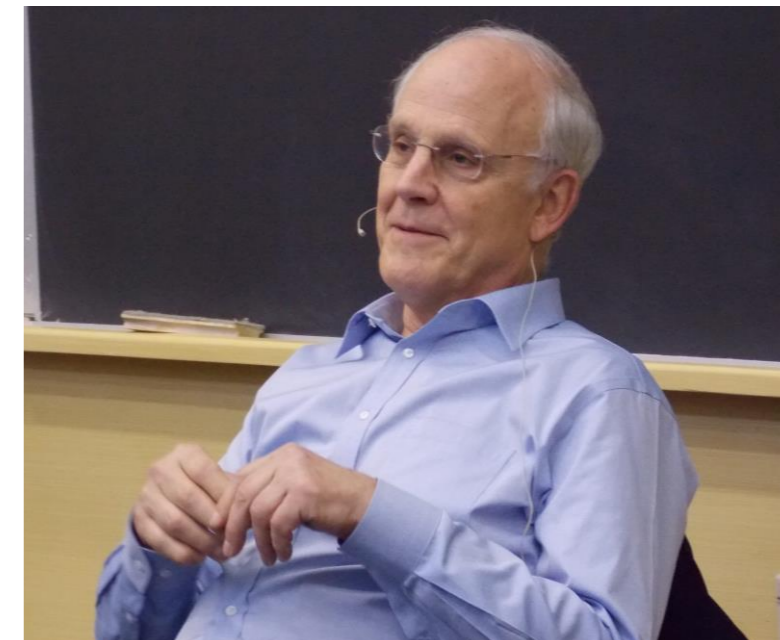


6780

Students



(2012 to 2023)





# 128 Internacional School and Minicourses for graduate students from 2012-2023

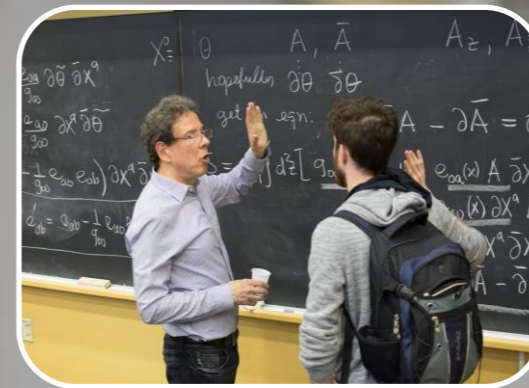
V Southern-Summer School on  
Mathematical Biology



Minicourse on  
Numerical Relativity



School on Fundamental  
Aspects of String Theory



School on Dark Matter



School on Physics  
Applications in Biology



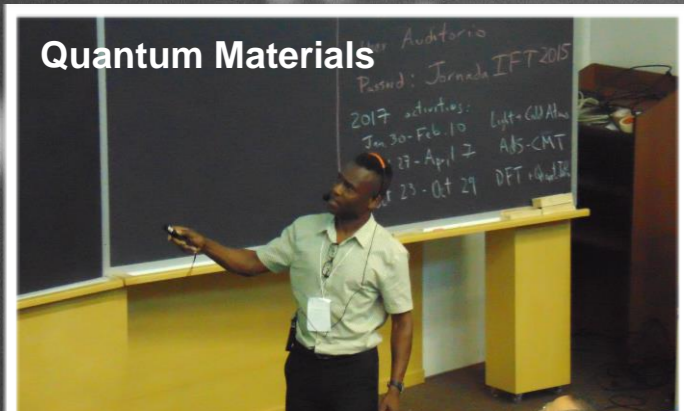
Climate Modelling over South America



States in  
I basis



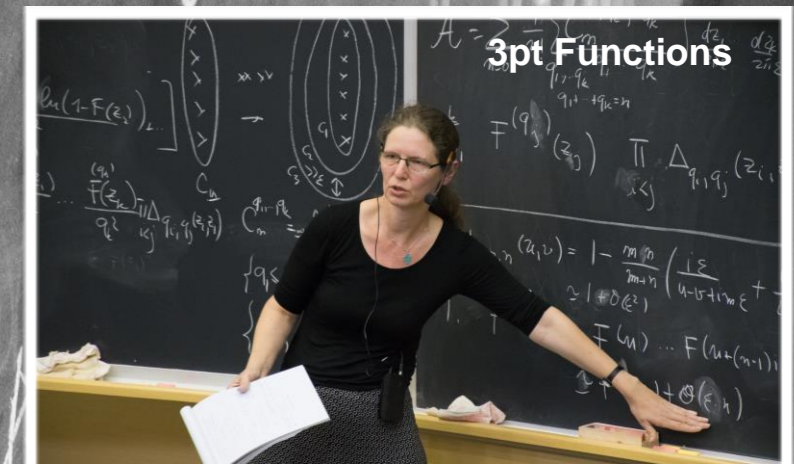
# 125 Workshops from 2012-2023



Quantum Materials



Urban Systems



3pt Functions



Magnetic Fields in Hadron Physics



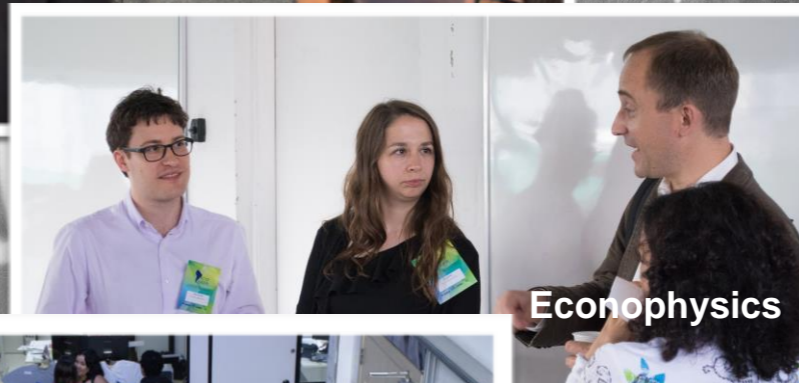
Particle Physics & Cosmology



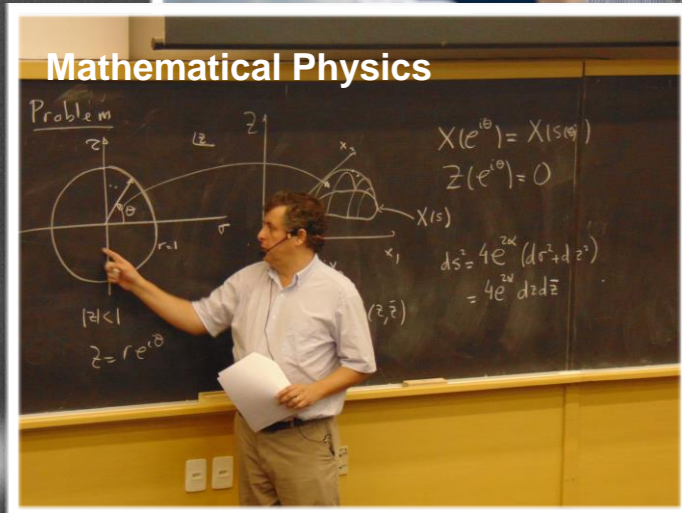
Entrepreneurship



String Field Theory



Econophysics



Mathematical Physics



Workshop on Increasing Diversity in Physics



Dark Matter





June 22 – July 3, 2020

## II JOINT ICTP-TRIESTE/ICTP-SAIFR SCHOOL ON PARTICLE PHYSICS

**ANDREA ROMANINO** (SISSA, Italy)

**FRANCESCO D'ERAMO** (U. of Padova, Italy)

**ROGERIO ROSENFELD** (IFT-UNESP/ICTP-SAIFR, Brazil)

**MASHA BARYAKHTAR** (New York U., USA)

**RICCARDO PENCO** (Carnegie Mellon U., USA)

**DANIEL FIGUEROA** (IFIC, Spain)

**ZACKARIA CHACKO** (U. of Maryland, USA) Ponton Memorial Lecturer



**July 6-10, 2020**  
by videoconference

**PRELIMINARY LIST OF SPEAKERS**

- |  |   |
|--|---|
| <b>O D Aguiar</b> (INPE, Brazil)           | <b>G F Moroni</b> (FNAL, USA)                     |
| <b>R Batista</b> (Radboud U., Netherlands) | <b>M G Munhoz</b> (UF-USP, Brazil)                |
| <b>N Bernal</b> (UAN, Colombia)            | <b>I Nasteva</b> (JFRJ, Brazil)                   |
| <b>X Bertou</b> (Balseiro, Argentina)      | <b>H Nunokawa</b> (PUC-Rio, Brazil)               |
| <b>R Camacho</b> (LPNHE, France)           | <b>E Paolini</b> (UNS, Argentina)                 |
| <b>E Carrera</b> (USFQ, Ecuador)           | <b>F Queiroz</b> (IIP, Brazil)                    |
| <b>F Chierchie</b> (UNS, Argentina)        | <b>M Rangel</b> (UFRJ, Brazil)                    |
| <b>P Chimentì</b> (UEL, Brazil)            | <b>R Rosenfeld</b> (IFT-UNESP/ICTP-SAIFR, Brazil) |
| <b>E Dal Pino</b> (IAG-USP, Brazil)        | <b>A C Rovero</b> (UBA, Argentina)                |
| <b>C Dib</b> (UTFSM, CHILE)                | <b>C Sandoval</b> (UNAL, Colombia)                |
| <b>C Dobrigkeit</b> (UNICAMP, Brazil)      | <b>A R-Wolf</b> (JPL, USA)                        |
| <b>A Etchegoyen</b> (CNEA, Argentina)      | <b>A Sanchez</b> (CERN, Switzerland)              |
| <b>J Fabris</b> (UFES, Brazil)             | <b>E Seareto</b> (UNICAMP, Brazil)                |

The goal of the Symposium, a follow-up of a workshop held in 2019, is to work towards establishing a regional consensus on the scientific objectives for each of the main topics of the submission tracks and to analyze the relevance of the proposed projects for the fulfillment of these objectives.

The Open Symposium will consist of plenary sessions and invited talks with ample time for discussion. White papers will be presented in short 10 minutes sessions and reviewed by the convenors of the respective subgroup. The short presentations will summarize the contents of the white papers and the convenors will put them in the perspective of the LA and international scenario, preparing the discussions to be followed.

Due to COVID-19, the symposium will be held online. Links to the videoconference will be available on the webpage, and if you wish to participate please register. *Participants who registered before March 8 do not need to register again.*

*There is no registration fee.*

## COVID-19 NO BRASIL: MODELOS DO PASSADO E DO FUTURO

com o prof. Roberto Kraenkel (IFT-UNESP)

06/06 · 10h - 13h

A aula será realizada utilizando o Zoom. Para mais informações sobre o programa acesse: [outreach.ictp-saifr.org/alunoEM](https://outreach.ictp-saifr.org/alunoEM)

85 online activities during the pandemic

## FÍSICA EM CASA

Quintas-feiras 19h · pelo canal SAIFR Divulga!

5/11 · SUPERCONDUTIVIDADE: UM FENÔMENO QUÂNTICO MACROSCÓPICO  
Eduardo Miranda (UNICAMP)

19/11 · MUDANÇAS CLIMÁTICAS: INVESTIGANDO O PASSADO PARA PREVER O FUTURO  
Ilana Wainer (IOUSP)

[outreach.ictp-saifr.org](https://outreach.ictp-saifr.org)

[youtube.com/saifrdivulga](https://youtube.com/saifrdivulga)

## ESCOLA DE VERÃO ICTP-SAIFR PARA JOVENS FÍSICOS

17 a 23 de janeiro de 2021

O ICTP-SAIFR, em parceria com a Universidade do Porto, realizará uma escola avançada de física para estudantes do ensino médio, através do Zoom.

• INSCRIÇÕES •

Submissão de propostas por estudantes de pós-graduação: até 30/11/2020  
Aplicações de estudantes de ensino médio: até 15/12/2020

• FORMULÁRIOS ON-LINE E MAIS INFORMAÇÕES •  
[outreach.ictp-saifr.org/escolaverao/](https://outreach.ictp-saifr.org/escolaverao/)

## Strings 2021

June 21 - July 2, 2021 | ICTP-SAIFR, São Paulo

Registration links are open below



# Outreach Activities for the general public

## Distinguished Public Lectures



*Papos*  
de **Física**

$$|\Psi\rangle = |\text{beer}\rangle + |\text{coffee}\rangle$$

## Ciência em Diálogo / Ciência no Cinema



Physics + Art in a museum / movie theatre



Informal seminar in a restaurant-bar



# Outreach Activities for high-school teachers

Translation of Perimeter Institute material  
into Português and Spanish

Workshops on modern physics topics





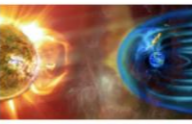
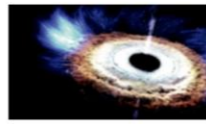

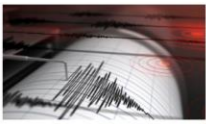

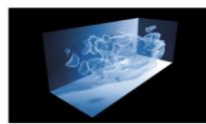
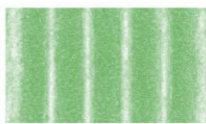



PI PERIMETER INSTITUTE

GRADE ▾ TYPE ▾ TOPIC ▾ POSTERS TEACHER NETWORK

Senior High (Gr 11-12)

Sort by: Featured ▾

 The Search for EHE: Breakout Activity	 Tools for Teaching Science	 Black Holes	 Contemporary Physics
 Fields	 Seeing Black Holes with an Earth-sized Telescope	 Science in the News - Biggest Radio Telescope Gets Bigger	 Wave Model Applications
 A Deeper Understanding of Energy	 The Mystery of Dark Matter	 The Challenge of Quantum Reality	 Everyday Einstein: GPS & Relativity



# 2020 Innovation Prize from the American Physical Society

Goal is to extend the network of high-school teachers to other countries in South America



## Modern Physics in the Latin-American Classroom

During the pandemic, high-school physics students and teachers in Latin America are lacking interesting classroom material which can be taught online. Perimeter Institute (Waterloo, Canada) has developed 15 volumes of material on modern physics for high-school students which is available online in English, French and Portuguese. This project will translate the material into Spanish so that it can be used throughout Latin America both online during the pandemic and in the classroom when schools reopen.

**Project Lead:** Nathan Berkovits (Sao Paulo State University)

ICTP SAIFR International Centre for Theoretical Physics South American Institute for Fundamental Research

APS physics

if Innovation Fund

PI

Actividades de marzo!

**ICTP-SAIFR FÍSICA DE FRONTERA EN ESPAÑOL**

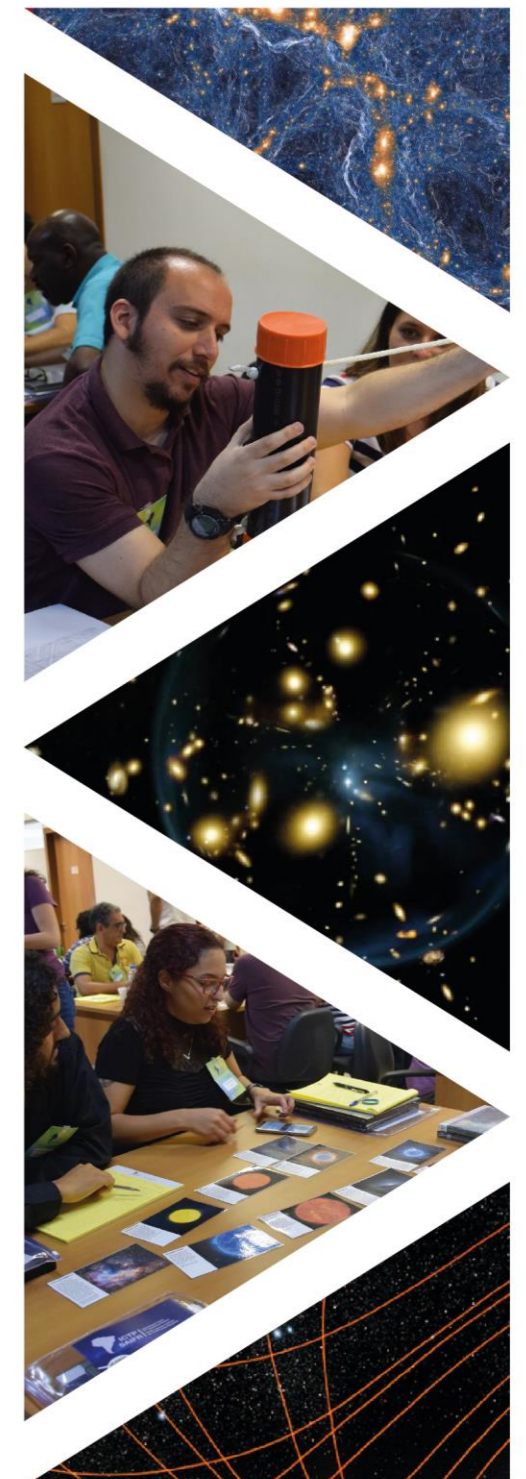
Actividades online para profesores de secundaria

**Fecha:** de 5/3 a 27/3 (viernes y sábados)

**Horario\*:** Viernes - 16h  
Sábados - 14h  
\*horario de Brasilia

**Inscripciones:**  
[ictp-saifr.org/salaespanol](http://ictp-saifr.org/salaespanol)

@ictpsaifr FAPESP ICTP unesp IFT - UNESP



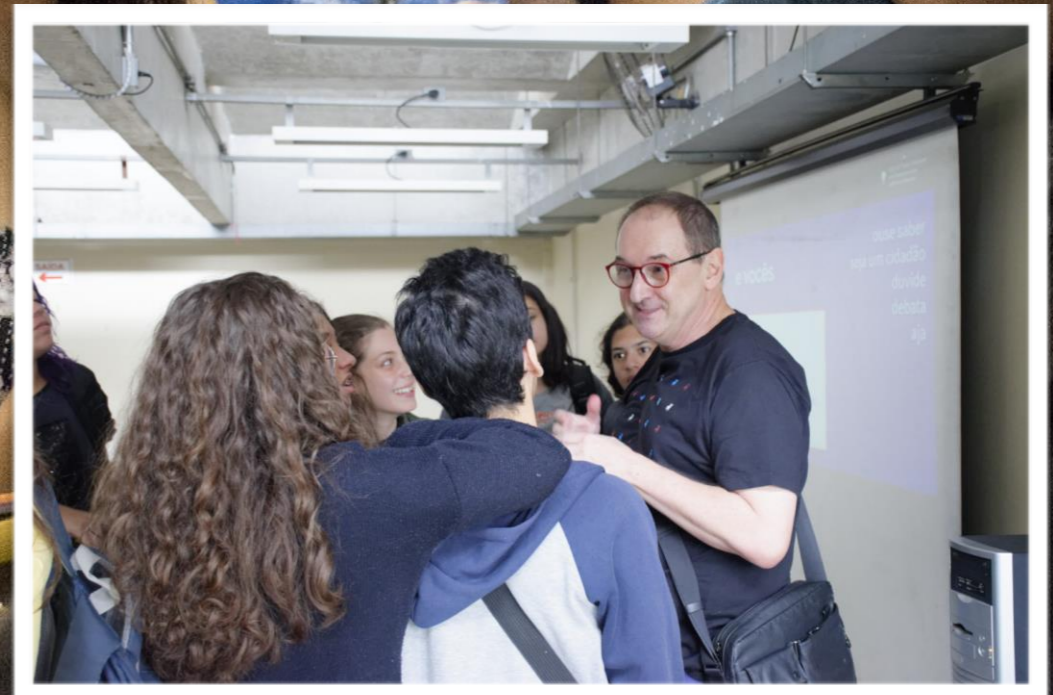


# Outreach Activities for high-school students

**Minicourses every Saturday**



**Visits to public schools**





# 4 Joint ICTP-SAIFR/ICTP-Trieste

## Schools on Cosmology

### Joint School and Workshop on Observational Cosmology

December 1-12, 2014

#### Organizers:

Raul Abramo, Paolo Creminelli, Alessandro Melchiorri, Rogerio Rosenfeld, Ravi Sheth

#### Lecturers:

- Philippe Brax – Beyond  $\Lambda$ CDM
- Paolo Creminelli – Inflation
- Scott Dodelson – Theory and Combined Probes
- Marcello Musso – Large Scale Structure II
- Anais Rassat – Gravitational Lensing
- Ravi Sheth – Large Scale Structure I
- Joe Zuntz – From Observations to Models (and back)



# II Joint School on Open Problems in Cosmology

July 17 - 28, 2017

## Organizers:

- Daniel Baumann
- Paolo Creminelli
- Daniel Green
- Rafael Porto
- Matias Zaldarriaga

## Lecturers:

- Paolo Creminelli: *Intro to Primordial Physics*
- Raphael Flauger: *Intro to CMB Theory*
- Oliver Hahn & Rafael Porto: *Intro to LSSJ*
- Julien Lesgourgues: *Intro to CMB observations*
- Will Percival: *Intro to LSS observations*
- Matias Zaldarriaga: *Advanced topics for the study of LSS*

# III Joint School on Observational Cosmology

July 22 – August 2, 2019

## Organizers:

- Raul Abramo
- Paolo Creminelli
- Mehrdad Mirbabayi
- Rogerio Rosenfeld

## Lecturers:

- Mehrdad Mirbabayi: *Intro to Inflation*
- Cora Dvorkin: *Intro to CMB Theory*
- Raul Abramo & Rogerio Rosenfeld: *Intro to LSS*
- Marko Simonović: *Advanced Topics in LSS*
- Alessandra Silvestri: *Beyond  $\Lambda$ CDM*
- Tim Eifler: *From observations to models*





**FABIAN SCHMIDT**  
(Max Planck I. for Astrophysics, Germany)  
*Structure Formation in the Universe*

**January 18-29, 2021**  
(by videoconference)



**DRAGAN HUTERER**  
(U. of Michigan, USA)  
*Cosmology from Large Galaxy Surveys*



**YACINE ALI-HAÏMOUD**  
(New York U., USA)  
*Physics of the Cosmic Microwave Background*

**IV JOINT ICTP-TRIESTE/  
ICTP-SAIFR SCHOOL  
ON COSMOLOGY:  
CHALLENGES FOR  
THE STANDARD  
COSMOLOGICAL MODEL**



**CHIARA CAPRINI**  
(AstroParticle and Cosmology L., France)  
*Cosmology from Gravitational Waves*



**VALERIE DOMCKE**  
(CERN, Switzerland)  
*Inflation and the Origin of Perturbations*



**PEDRO FERREIRA**  
(Oxford U., UK)  
*Testing Beyond  $\Lambda$ CDM Models*

# Giambiagi Winter School on Cosmology

**17 - 28 July 2023**  
An ICTP Hybrid Meeting  
Buenos Aires, Argentina



# 3 Joint ICTP-SAIFR/ICTP-Trieste Schools on Particle Physics

June 18-29, 2018

## FIRST JOINT ICTP-TRIESTE/ ICTP-SAIFR SCHOOL ON PARTICLE PHYSICS

**GIULIA ZANDERIGHI**  
Practical QCD at Colliders  
Univ. of Oxford, UK

**GUSTAAF BROOIJMANS**  
Experimental Elements for  
Theorists: A Roadmap to  
the Future  
Columbia Univ., USA

**LAURA COVI**  
Particle Physics and  
the Early Universe  
Institute for Theoretical  
Physics-Göttingen, Germany

**PATRICK FOX**  
Dark Matter and Particle Physics  
FERMILAB, USA

**ALEX POMAROL**  
Lectures on Beyond the  
Standard Model Physics  
UAB & IFAE, Spain

**BENJAMIN GRINSTEIN**  
Lectures on the  
Standard Model  
UCSD, USA

June 22 – July 3, 2020

## II JOINT ICTP- TRIESTE/ICTP-SAIFR SCHOOL ON PARTICLE PHYSICS

**ANDREA ROMANINO**  
SISSA, Italy

**FRANCESCO D'ERAMO**  
U. of Padova, Italy

**ROGERIO ROSENFELD**  
IFT-UNESP/ICTP-SAIFR, Brazil

**MASHA BARYAKHTAR**  
New York U., USA

**RICCARDO PENCO**  
Carnegie Mellon U., USA

**DANIEL FIGUEROA**  
IFIC, Spain

**ZACKARIA CHACKO**  
U. of Maryland, USA  
Ponton Memorial Lecturer

June 24 – July 5, 2024

## III JOINT ICTP-SAIFR/ICTP- TRIESTE SUMMER SCHOOL ON PARTICLE PHYSICS

**CHRISTOPHE GROJEAN**  
DESY, Germany  
Standard Model and Beyond

**YU-TIN HUANG**  
National Taiwan U., Taiwan  
Amplitudes and applications

**KFIR BLUM**  
Weizmann Institute, Israel  
Cosmology and Particle Physics

**MARKUS LUTY**  
U. of California at Davis, USA  
Formal developments in Beyond  
Standard Models

**LAURA REINA**  
Florida State University, USA  
Collider Physics

**NICOLÁS BERNAL**  
New York University at Abu  
Dhabi, United Arab Emirates  
Dark Matter



# First ICTP-SAIFR/MITP Joint Activity



**September 12-23, 2022**

**JOINT ICTP-SAIFR/MITP  
SUMMER SCHOOL ON  
PARTICLE PHYSICS BEYOND  
THE STANDARD MODEL**

**CSABA CSAKI**  
Cornell U., USA  
*Naturalness-motivated BSM*

**TILMAN PLEHN**  
U. of Heidelberg, Germany  
*Tools at the Frontiers of BSM: future colliders and machine learning*

**JAY M. HUBISZ**  
Syracuse U., USA  
*Cosmology*

**RAFFAELE TITO D'AGNOLO**  
IPhT-Saclay, France  
*The light and feeble frontier: light DM, Feebly Interacting Particles, Axion-like Particles and other beasts*

**Yael SHADMI**  
Israel I. of Technology – Technion, Israel  
*Tools at the Frontiers of BSM: amplitudes*

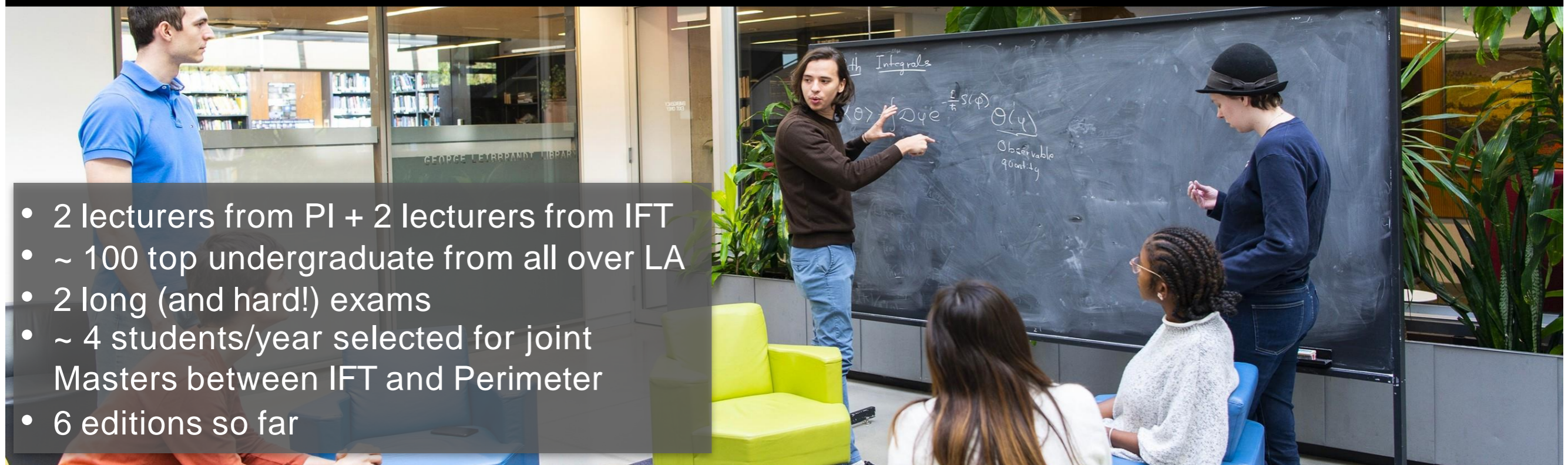
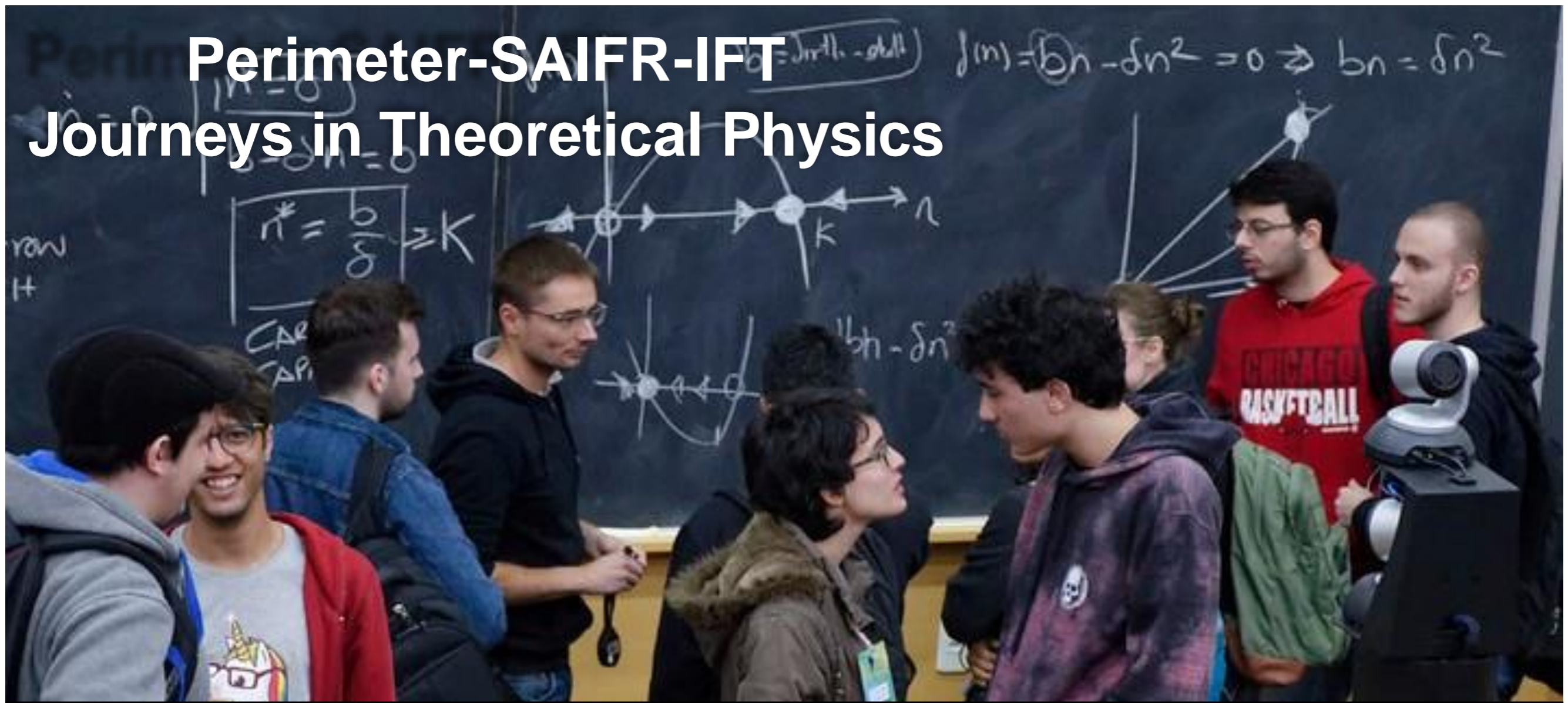
**GILAD PEREZ**  
Weizmann I., Israel  
*Frontiers in non-natural BSM*

**Organizers:** Gustavo Burdman, Felix Yu, Matthias Neubert, Rogerio Rosenfeld





# Perimeter-SAIFR-IFT Journeys in Theoretical Physics



- 2 lecturers from PI + 2 lecturers from IFT
- ~ 100 top undergraduate from all over LA
- 2 long (and hard!) exams
- ~ 4 students/year selected for joint Masters between IFT and Perimeter
- 6 editions so far



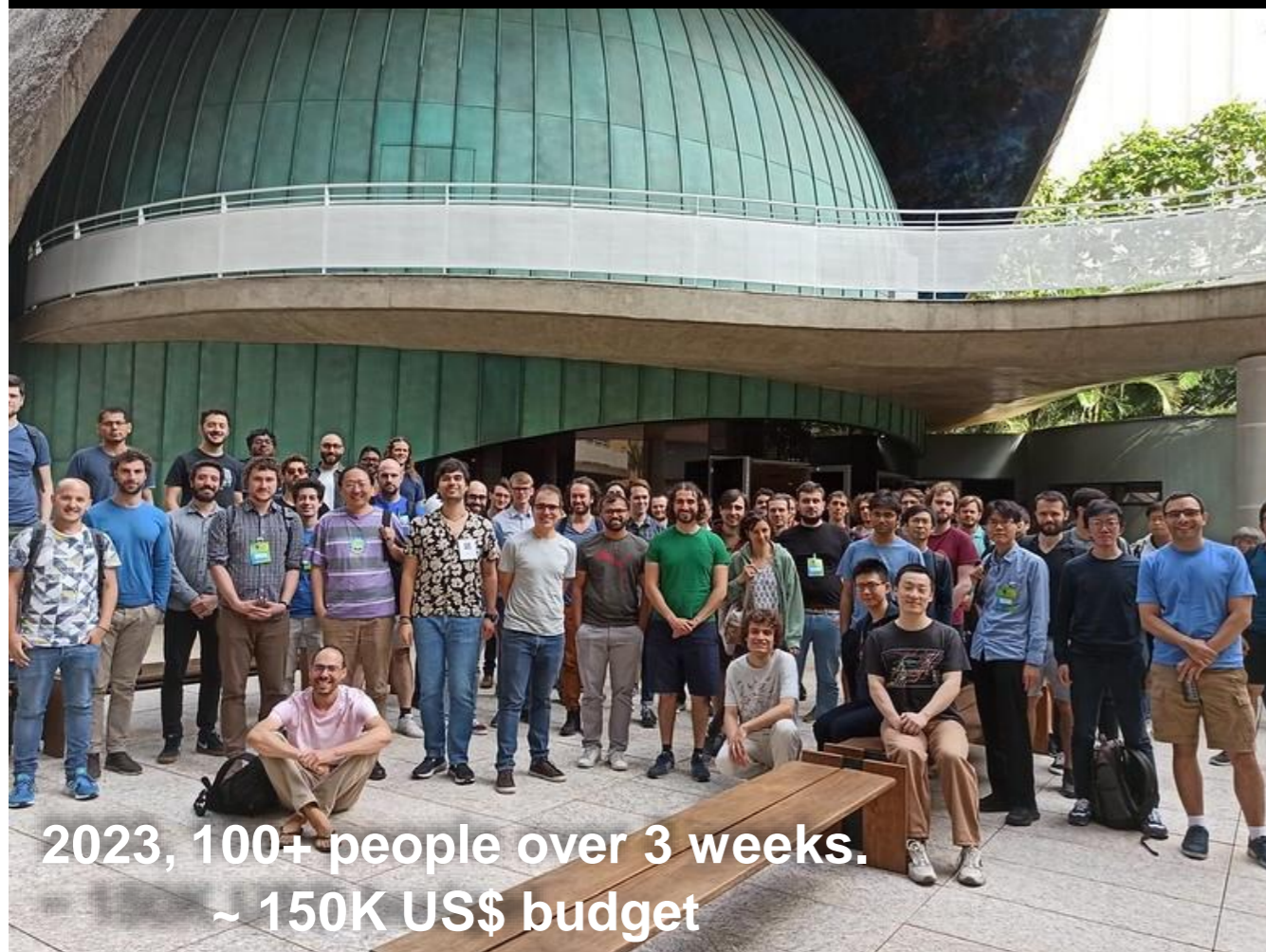
# Simons Collaboration Bootstrap



Morning Talks in the Dome, @Principia



Afternoon Discussions @the Scientific Building



2023, 100+ people over 3 weeks.  
~ 150K US\$ budget



2017, First Meeting  
of the Simons Collaboration (also a school)



# Outreach activities



General  
public



High-school  
teachers



High-school  
students



# Public lectures





# Informal monthly discussions



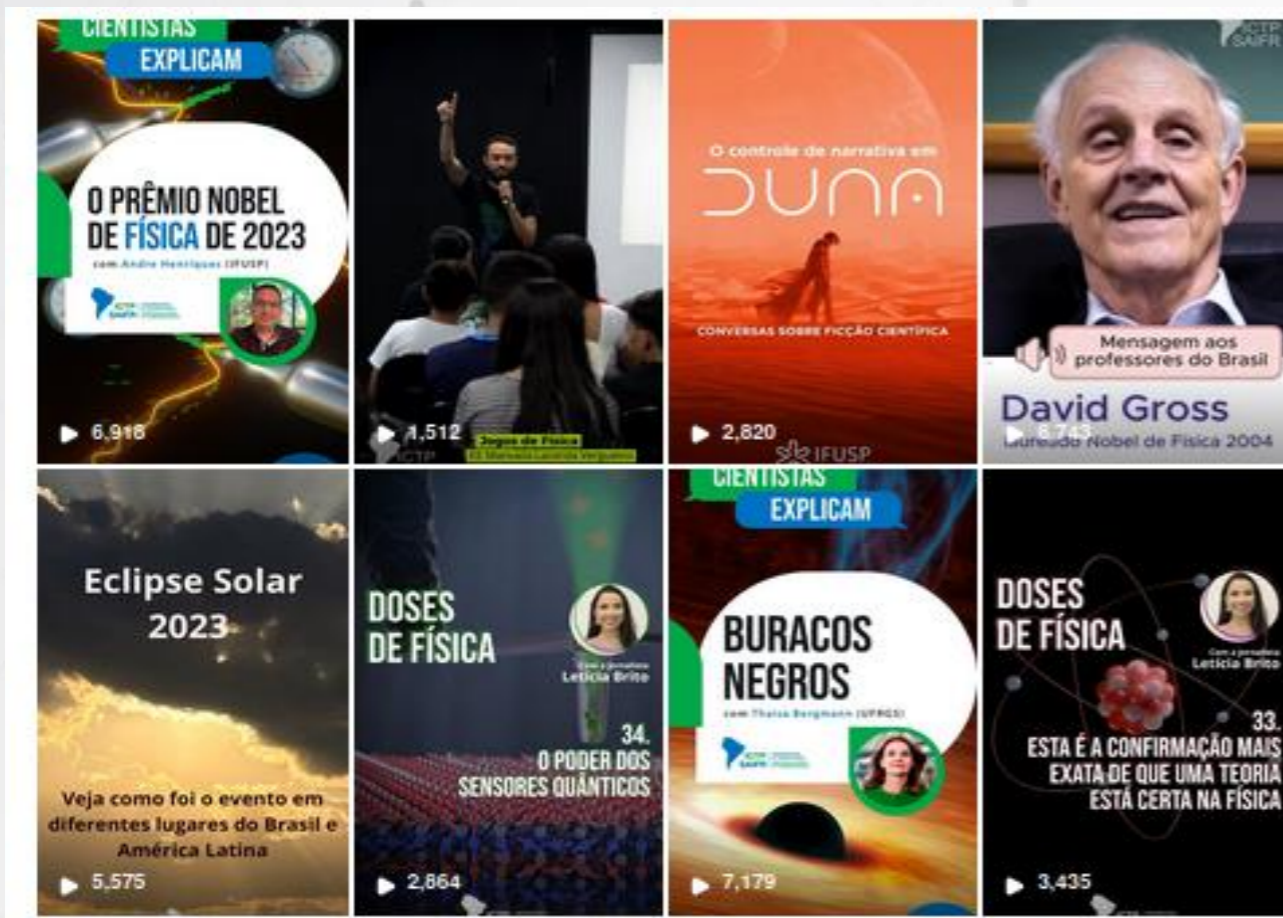
*Ciência no cinema* - movie session with discussions



*Papos de física* - seminar in a bar



# Videos and reports



Videos for social media



Multimedia reports for a general audience



# Modern Physics in the Classroom

In-person and online workshops  
for high-school teachers



ICTP SAIFR International Centre for Theoretical Physics South American Institute for Fundamental Research APS physics AMERICAN PHYSICAL SOCIETY PI PROGRESS IN PHYSICS

Actividades de oct. y nov./2022!

## ICTP-SAIFR FÍSICA DE FRONTERA EN ESPAÑOL

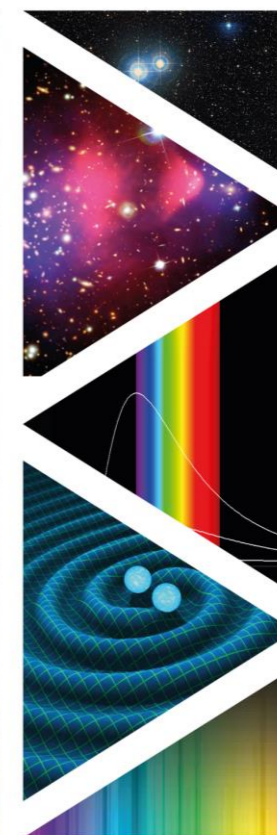
Actividades online para profesores de secundaria

**Fecha:** 15/10 (Ondas Gravitacionales)  
12/11 (Materia Oscura)  
26/11 (Constante de Planck)

**Horario\*:** a las 16h (sábados)  
\*hora de Brasilia

**Inscripciones:**  
[ictp-saifr.org/salaespanol](http://ictp-saifr.org/salaespanol)

@ictpsaifr





# Summer courses for high-school teachers

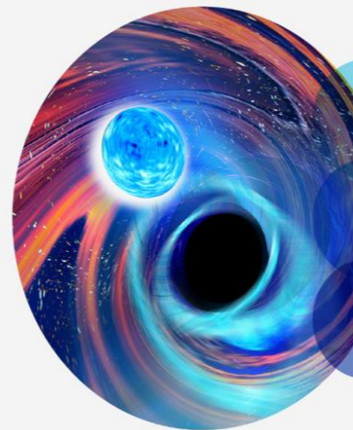


## II CURSO DE VERANO ICTP-SAIRF

para profesores de Física de secundaria

Edición especial virtual: ONDAS GRAVITACIONALES Y LIGO

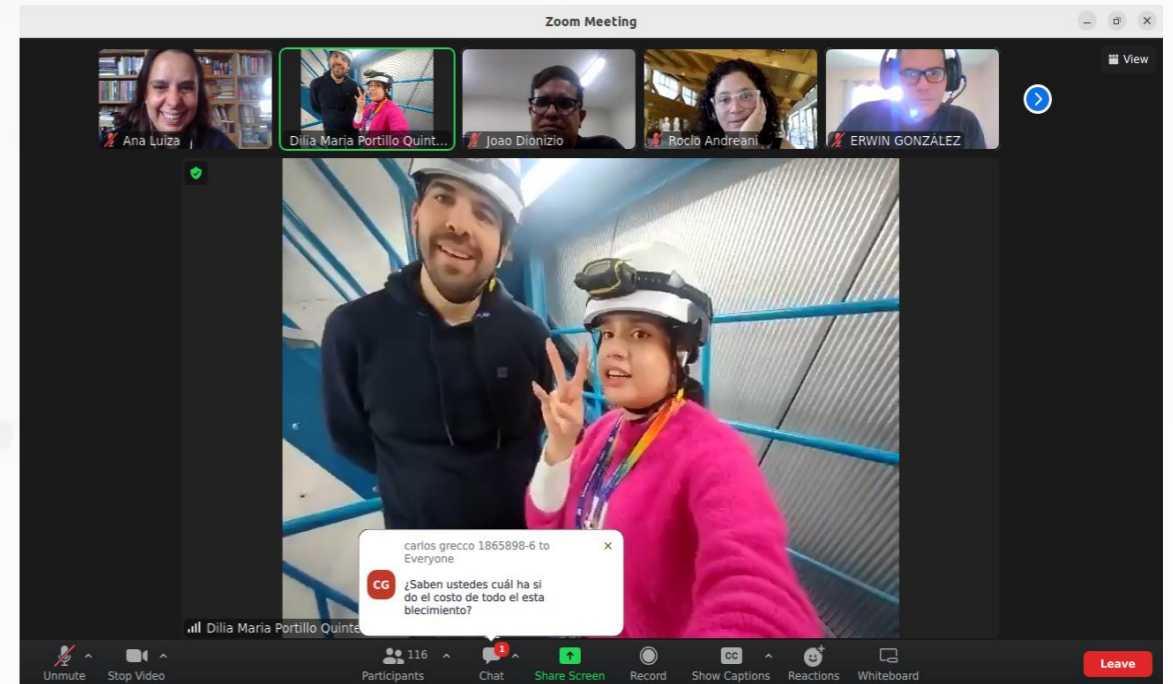
de 17 al 21 de enero de 2022



## III CURSO DE VERANO ICTP-SAIRF

para profesores de Física de secundaria • actividad virtual

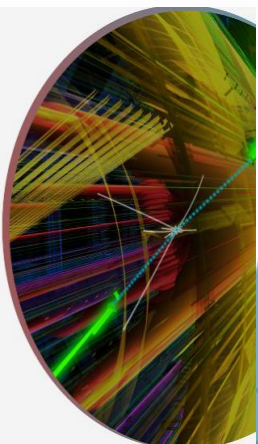
Edición especial: Cosmología • del 16 al 20 de enero de 2023



## IV CURSO DE VERANO ICTP-SAIRF

para profesores de Física de secundaria • actividad virtual

Edición especial: Física de partículas • del 22 al 26 de enero de 2024





# Edición Montevideo - Uruguay, 2023



Actividad presencial!

ICTP SAIFR | APS physics | PI

**10 de junio · 9h30 - 18h30**

## FÍSICA DE FRONTERA PARA EL AULA

**Edición Montevideo (Uruguay)**

Local: Edificio Polifuncional "José Luis Massera",  
Facultad de Ingeniería (UdelaR)  
(Senda Nelson Landoni 631, Montevideo)

Inscripciones  
[outreach.ictp-saifr.org/ensino-medio/professores/](https://outreach.ictp-saifr.org/ensino-medio/professores/)

@ictpsaifr

FAPESP | ICTP | unesp | IT-UNESP



# Saturday Minicourses for high-school students

 **ICTP SAIFR** International Centre for Theoretical Physics  
South American Institute for Fundamental Research

## RELATIVIDADE

Minicursos ICTP-SAIFR para estudantes do ensino médio  
com o prof. **Pedro Vieira** (ICTP-SAIFR/Perimeter I.)  
**Data e horário:** 07/05 - 28/05 (domingos) • 10h

**Formato híbrido:**  
**Local:** Auditório IFT-UNESP (R. Dr. Bento Teobaldo Ferraz, 271 -  
Várzea da Barra Funda, São Paulo - SP)  
com transmissão ao vivo pelo canal do  
Youtube ICTP-SAIFR.

Inscrições e mais informações:  
[ictp-saifr.org/alunos](http://ictp-saifr.org/alunos)





# Winter Course



FAPESP ICTP unesp IFT-UNESP PI

ICTP SAIFR International Centre for Theoretical Physics South American Institute for Fundamental Research

## CURSO DE INVERNO ICTP-SAIFR PARA JOVENS FÍSICOS

08 a 12 de julho, 2023

**Minicurso “A Mecânica Quântica e os novos materiais: metais, grafenos e os supercondutores”**  
com o prof. Alexandre Reily Rocha (IFT-UNESP)

**Palestra “Simulações computacionais de interfaces água/metal”**  
com a profª. Luana Pedroza (UFABC)

**Módulos de aulas:**  
Matemática para mecânica quântica  
Módulo prático de programação em Python

**Local:** IFT-UNESP e NCC-UNESP  
(R. Dr. Bento Teobaldo Ferraz, 271)

**Inscrições até: 01/07**

**Mais informações:**  
[outreach.ictp-saifr.org/cursodeinverno](https://outreach.ictp-saifr.org/cursodeinverno)



# Summer Schools with group projects



**ICTP SAIFR** International Centre for Theoretical Physics South American Institute for Fundamental Research

**U. PORTO**

## IV ESCOLA DE VERÃO ICTP-SAIFR PARA JOVENS FÍSICOS

15 a 20 de janeiro de 2024

O **ICTP-SAIFR**, em parceria com a **Universidade do Porto**, realizará, **presencialmente**, uma escola avançada de física para estudantes do ensino médio.

- PROJETOS DE PESQUISA CRIADOS E SUPERVISIONADOS POR ESTUDANTES DE PÓS-GRADUAÇÃO
- PALESTRAS E MINICURSO SOBRE TÓPICOS DE FÍSICA COM PROFESSORES UNIVERSITÁRIOS
- MESAS-REDONDAS SOBRE CARREIRAS EM FÍSICA

PRAZO PARA INSCRIÇÕES DE ESTUDANTES DE ENSINO MÉDIO  
04/12/2023

INSCREVA-SE!  
[outreach.ictp-saifr.org/escolaverao/](https://outreach.ictp-saifr.org/escolaverao/)

FAPESP ICTP unesp PT-UNESP PI



# Visits to Public Schools



*Físicos na Escola (Physicists at School)*



*Jogos de Física (Physics Games)*



# 2024 ICTP-SAIFR Schools and Minicourses



**The Holography of Solitons, March 4-7**

**Minicourse on Quantum Computing, April 8-10**

**Minicourse on Quantum Gravity Problems, May 20-24**

**School on Modeling Infectious Disease Dynamics, May 6-12**

**III Joint ICTP-SAIFR/ICTP-Trieste School on Particle Physics, June 24 – July 5**

**Second School on Dark Matter and Neutrino Detection, July 8-19**

**2024 Perimeter-SAIFR-IFT Journeys into Theoretical Physics, July 22-28**

**Cosmological History: from Gravitational Waves to Exoplanets, July 29 – August 9**

**School on Water: Biological and Technological Applications, September 2-7**

**School on Active Matter, September 30 – October 4**

**Second Quantum Computing School, October 7-18**

**School on Few-Body Physics, October 21–25**

**School on Biological Physics across Scales: Pattern Formation, November 11-22**

**Third School on Data Science and Machine Learning, December 2-6**



# 2024 ICTP-SAIFR Workshops and Programs



**ICTP-SAIFR 12th Anniversary Symposium, February 18-20**

**2024 ICTP-SAIFR Council Meeting, February 21**

**APS/SAIFR Satellite March Meeting, March 3-8**

**APS/SAIFR Satellite April Meeting, April 3-6**

**14th Workshop on Neutrino-Nucleus Interactions (NUINT 2024), April 15-20**

**Workshop on Dynamical Processes on Complex Networks, May 13-17**

**Bootstrap meets Integrability, June 10-14**

**Integrability in Gauge and String Theory, June 17-21**

**III LASF4RI for HECAP Symposium: Update of the Strategic Plan, August 26-29**

**Witnessing Quantum Aspects of Gravity in a Lab, September 23–27**

**3rd Symposium on Current Topics in Molecular Biophysics (CTMB3), October 7-9**

**Third Brazilian Meeting of Science Communicators, November 15-17**

**Program on “Fundamental Physics meets Facilities in Cosmology”, December 2-13**



# 2025 Activity Proposals



## January – April Physics of Life

- Biological Physics
- Complex Systems
- Mathematical Ecology
- Medical Physics



## May - August Fundamental Physics

- Particle Physics
- Field Theory
- Cosmology
- Astrophysics



## September - December Quantum Systems/ Artificial Intelligence

- Quantum computation
- Quantum technologies
- Condensed matter physics
- Machine learning



# New ICTP-SAIFR activities planned at Instituto Principia

## Long-term programs on a specific research topic

will allow local researchers to collaborate with international researchers on cutting-edge problems in month-long programs similar to those organized by KITP in Santa Barbara.



## Monthly group meetings in different research areas

will bring together students and researchers from different universities in the state of São Paulo for joint seminars and discussions.





# Search for new ICTP-SAIFR researchers

- Ongoing search for 2 new Simons-FAPESP “tenure-track” researchers (application deadline **Feb. 29, 2024**)

**AcademicJobsOnline.org**  
[ICTP South American Insti...mental Research; faculty]

**São Paulo State University, ICTP South American Institute for Fundamental Research**

**Position ID:** UNESP-ICTP-SAIFR-SIMONS2023 [#26662]  
**Position Title:** 2 Simons-FAPESP Tenure-Track Research Professors  
**Position Type:** Tenured/Tenure-track faculty



## 1] Connections of physics to biology

Search committee: W. Bialek, R. Goldstein, S. Levin, J.N. Onuchic

## 2] All other areas related to theoretical physics

Search committee: L. Cugliandolo, S. Donaldson, E. Fradkin, M. Green, D. Gross

- Additionally, IFT-UNESP will have **4 new permanent positions** in 2024-25
- University salary can be supplemented with research chairs from private sources (Simons Foundation, UCLA Baumik Institute, iAdS endowment fund)





**ICTP** | International Centre for Theoretical Physics  
**SAIFR** | South American Institute for Fundamental Research



*Thanks for your attention and enjoy the symposium!*

Webpage [ictp-saifr.org](http://ictp-saifr.org)

X [@ictpsaifr](https://twitter.com/ictpsaifr)

Instagram [@ictpsaifr](https://www.instagram.com/ictpsaifr)