



ICTP-SAIFR: A South American Center for Theoretical Physics

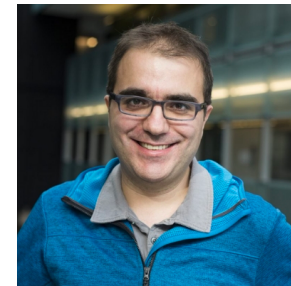
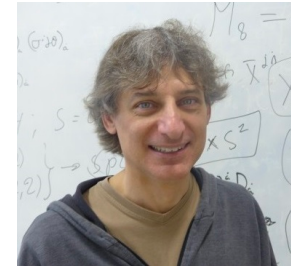
2021 John Wheatley award shared with Fernando Quevedo

Nathan Berkovits
ICTP-SAIFR/IFT-UNESP



ICTP | International Centre for Theoretical Physics

SAIFR | South American Institute for Fundamental Research



Mission: *To be among the leading Theoretical Physics Institutes in the world, performing research, training and outreach at the highest standards and serving as a stable international scientific hub for all of South America.*

Motivation

- Theoretical physics institutes play an important role in efficiently **bringing researchers together and organizing activities**. Abdus Salam dreamed of ICTP partner institutes in developing regions throughout the world.
- South America has a few countries with **highly developed** physics research (Brazil, Argentina, Chile) and several countries with **less developed** physics research.
- Although there are dozens of theoretical physics institutes in North America, Europe, and Asia, there are very few in South America due to **excessive bureaucracy, unstable funding and lack of long-term planning**.
- Example of successful Mathematics institute: IMPA in Rio de Janeiro

Why IFT-UNESP in São Paulo?

- Founded in 1952, IFT-UNESP is one of the oldest and most prestigious graduate schools in theoretical physics in South America with approximately 20 professors and 75 masters and PhD students.
- The São Paulo state research funding agency FAPESP is perhaps the most stable and well-funded agency in South America.
- IFT-UNESP is centrally located next to a major bus/train station near the largest South American airport and close to several large top-ranked universities.
- The original IFT building near the financial section of São Paulo is being restored and may soon be available for hosting scientific activities.



BRIEF HISTORY OF ICTP-SAIFR 2011 - ...



IFT 1952



IFT-UNESP 1987



ICTP Partners 2010



Inauguration Ceremony 2012



FAPESP 1962

SIMONS
FOUNDATION

Simons 1994



ICTP-UNESP MoU 2010



Simons Fellows 2014



ICTP 1964



Perimeter 1999



Steering Committee 2011



Perimeter MoU 2015



UNESP 1976



UNESP Barra Funda 2009

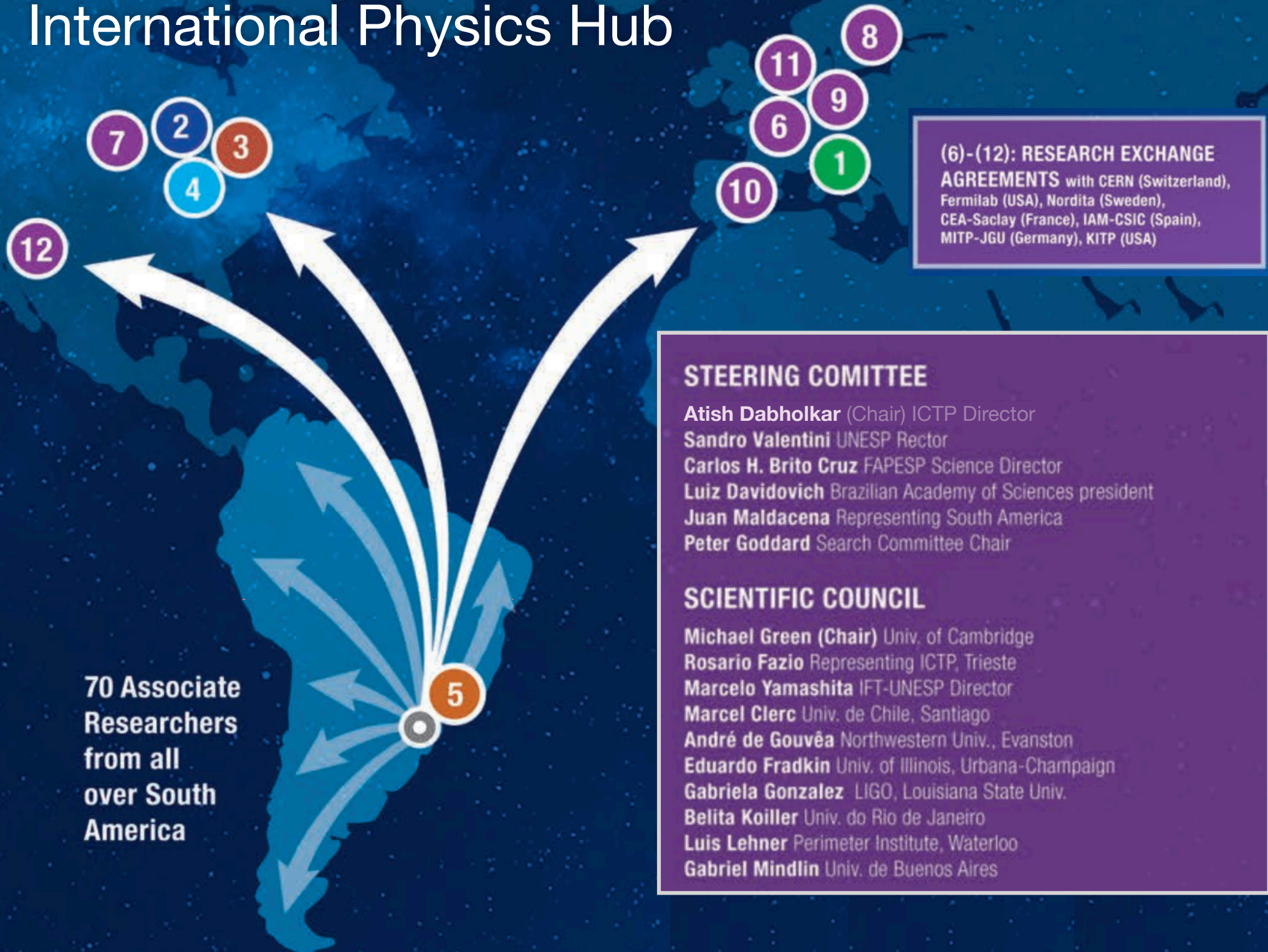


FAPESP grants '11 '16



Serrapilheira 2017

International Physics Hub





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

Public Funding



Organizational support and joint activities



Infrastructure and salaries of professors and staff

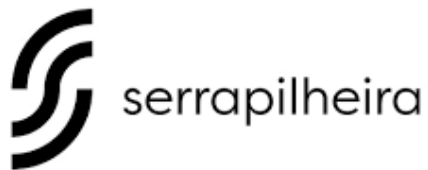


Research and training activities, postdocs and visitors

Private Funding



Tenure track positions for junior faculty



Quantitative biology training program



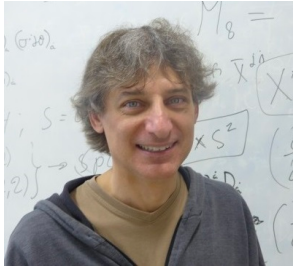
Research exchanges, joint faculty (Pedro Vieira) and joint master's program fellowships



2020 COVID-19 innovation award



Outreach



Nathan Berkovits - String Theory

SAIFR Diretor

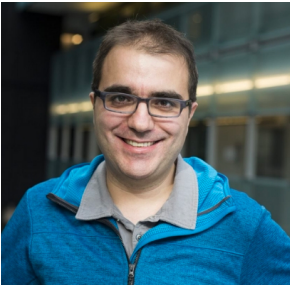
2009 TWAS Physics award



Rogerio Rosenfeld - Cosmology/Particle Physics

SAIFR Vice-diretor

President of the Brazilian Physical Society



Pedro Vieira - Quantum Field Theory

Coordinator of the Perimeter/ICTP-SAIFR partnership

FAPESP excellence chair holder since 2020

Gribov Medal 2015, Sackler Prize in Physics 2016, New Horizons Prize in Physics 2020



Ricardo Martinez-Garcia - Quantitative Ecology

SAIFR-Serrapilheira quantitative biology program coordinator

Science 2020 cover article



Riccardo Sturani - Gravitational Waves

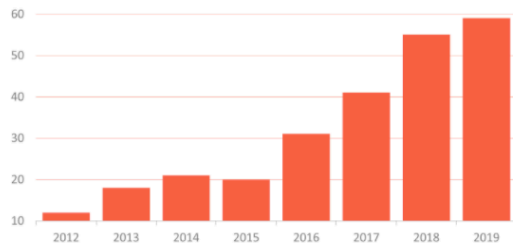
Laser Interferometer Gravitational-Wave Observatory member

Breakthrough Prize 2016 for the first direct BH observation

ICTP-SAIFR growth from 2012 to 2019

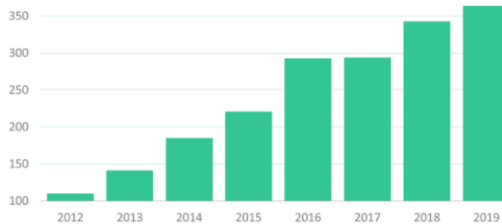
257

Activities



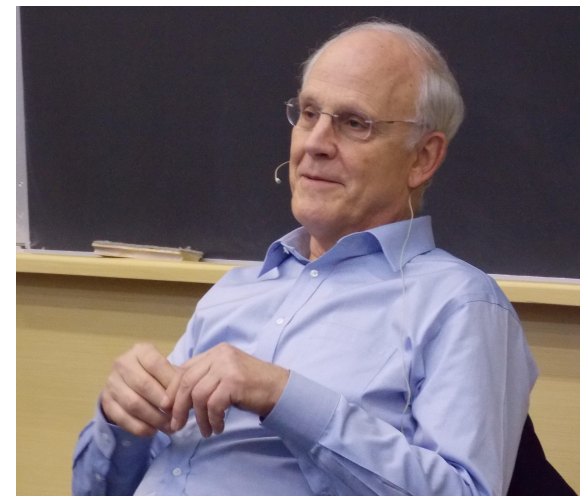
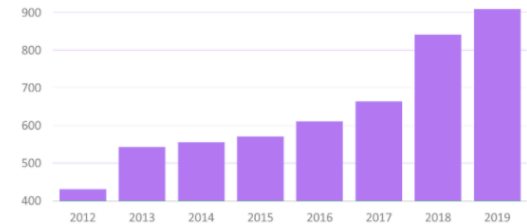
1,951

Visiting Scientists



5,122

Students



84 International Schools and Mini-courses for graduate students from 2012 to 2019

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



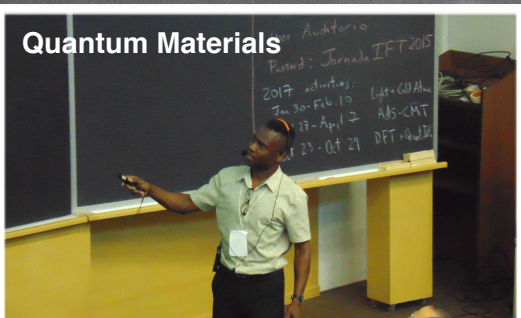
Climate Modelling over South America



States in

80 Workshops from 2012 to 2019

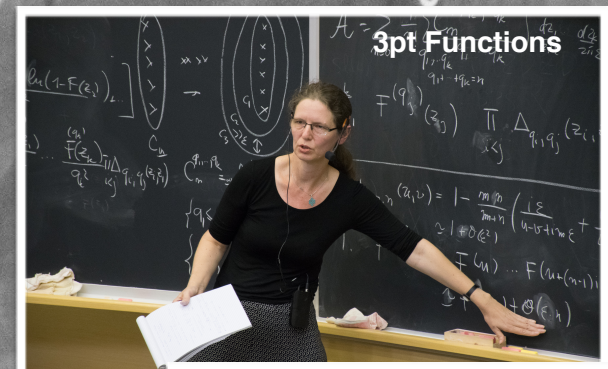
Quantum Materials



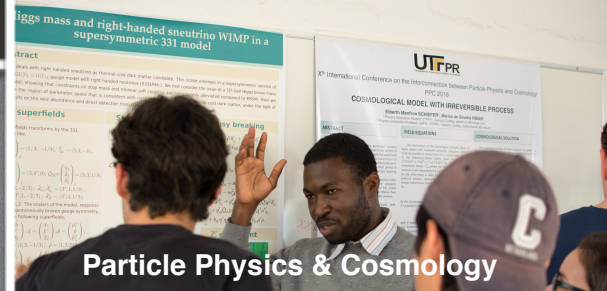
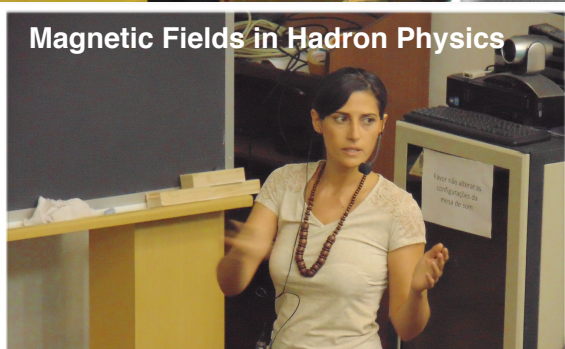
Urban Systems



3pt Functions



Magnetic Fields in Hadron Physics



Particle Physics & Cosmology

String Field Theory



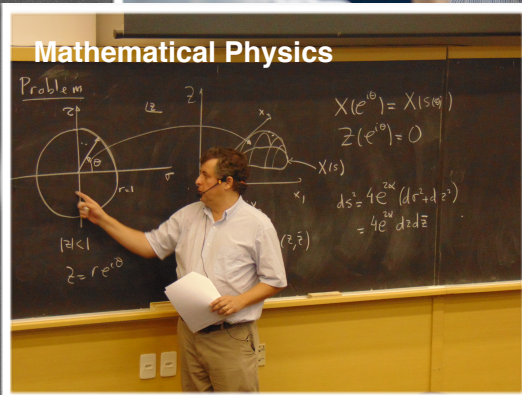
Econophysics



Entrepreneurship



Mathematical Physics



Workshop on Increasing Diversity in Physics



Dark Matter



Outreach Activities for general audience

Distinguished public lectures



Papos
de Física

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

IMS Ciência em Diálogo



Physicist + Artist in an art museum



Informal physics talks in a bar

Outreach Activities for physics undergraduates

ICTP-SAIFR young physicist award based on mini-course exam for top undergraduates



IFT-Perimeter-SAIFR Journeys into Theoretical Physics

Outreach Activities for high-school students

Saturday mini-courses



Visits to public schools



Outreach Activities for high-school teachers


Workshops on modern physics topics

Translation of Perimeter Inst. resources




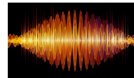

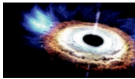

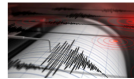

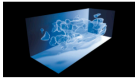
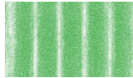



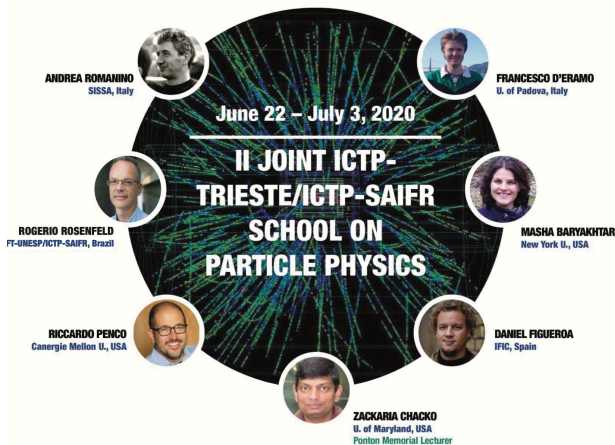
Perimeter Institute

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



July 6-10, 2020
by videoconference

PRELIMINARY LIST OF SPEAKERS

O D Aguiar (INPE, Brazil) **G F Moroni** (FIAL, USA)
R Batista (Radboud U., Netherlands) **M G Munhoz** (IF-USP, Brazil)
N Bernal (UAN, Colombia) **I Nastera** (UFRRJ, Brazil)
X Bertou (Balseiro, Argentina) **H Nunokawa** (PUC-Rio, Brazil)
R Camacho (LPNHE, France) **E Paolini** (UNS, Argentina)
E Carrera (USFQ, Ecuador) **F Queiroz** (IP, Brazil)
F Chierchia (UNS, Argentina) **M Rangel** (UFRRJ, Brazil)
P Chimenti (UEL, Brazil) **R Rosenfeld** (IFT-UNESP/ICTP-SAIFR, Brazil)
E Dal Pino (IAG-USP, Brazil) **A C Rovero** (UBA, Argentina)
C Dib (UTFSM, Chile) **C Sandoval** (UNAL, Colombia)
C Dobrigkeit (UNICAMP, Brazil) **A R-Wolf** (JPL, USA)
A Etchegoyen (CNEA, Argentina) **A Sanchez** (CERN, Switzerland)
J Fabris (UFES, Brazil) **E Segreto** (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.

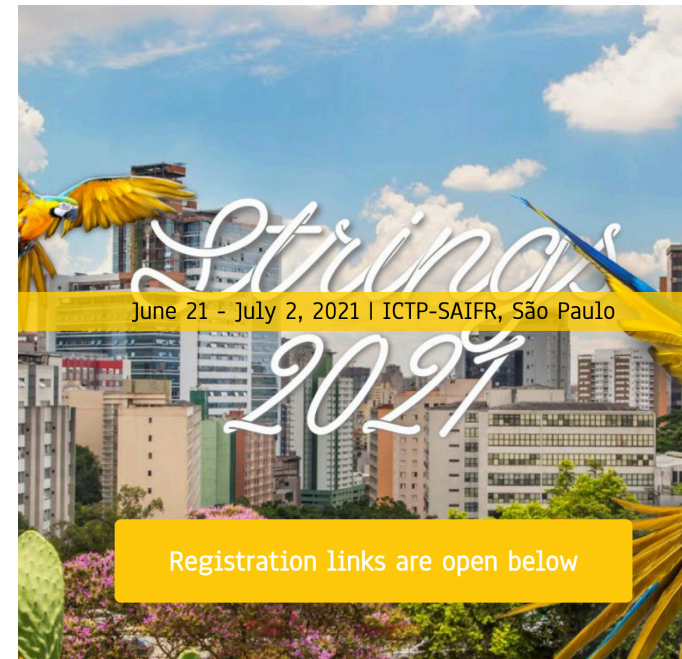
The Open Symposium will consist of plenary sessions and invited talks with ample time for discussion. White papers will be presented in short 10 minutes sessions and reviewed by the convenors of the respective subgroup. The short presentations will summarize the contents of the white papers and the convenors 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.



Over 50 online activities since March 2020



Future Perspectives: Research

New Simons-FAPESP research group leaders (June 1 application deadline)

AcademicJobsOnline.org

[New Employer](#) | [View Jobs](#) | [Registered Employers](#) | [Contact Us](#)

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

Position ID: [UNESP-ICTP-SAIFR-RGL](#) [#18260]

Position Title: Research Group Leader in Theoretical Physics and Related Fields

Position Type: Tenured/Tenure-track faculty

Position Location: São Paulo, SP 01148-070, Brazil [[map](#)]

Subject Areas: Theoretical Physics / Gravitational waves, Cosmology, Astrophysics, Complex systems including applications to biology, Quantum information/quantum matter, Statistical physics, Condensed matter theory, Particle physics (theoretical and experimental)

Appl Deadline: 2021/06/01 11:59PM (posted 2021/03/05, listed until 2021/09/05)

Position Description: [Apply](#)



Search committee: M. Green (Cambridge U), W. Bialek (Princeton), I. Cirac (MPI Garching), L. Cugliandolo (Sorbonne), S. Dodelson (Carnegie Mellon), D. Gross (KITP) and ICTP-SAIFR council members.

Future Perspectives: Training

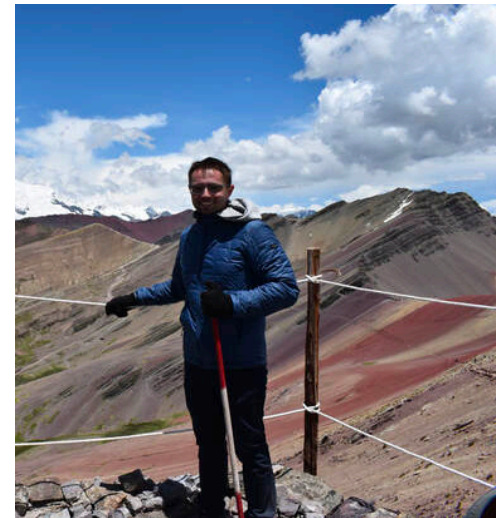
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Applications now open: Training Program in Quantitative Biology and Ecology

Institutional

Since March 9, the Training Program in Quantitative Biology and Ecology is open for applications. The program has been organized by Serrapilheira and the South American Institute for Fundamental Research (ICTP-SAIFR). Applications will be accepted until the 3rd of May. **Note that the first 500 applicants will have priority in the selection process**, therefore we encourage applications to be submitted as soon as possible.

The new program will offer training free of charge in life sciences with a focus on the use of mathematics, physics and computer science. Selected applicants will learn about quantitative methods to address issues at the forefront of biology and ecology.



Ricardo Martinez — recent ICTP-SAIFR faculty hire — will coordinate the program.

Future Perspectives: Outreach

Extend high-school teacher network across all of Latin America.



2020 COVID-19 APS Innovation Award
(2 winners out of 68 proposals)

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

IFT 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
*horario de Brasilia Sábados - 14h

Inscripciones:
ictp-saifr.org/salaespanol

@ictpsaifr FAPESP ICTP unesp IFT-UNESP



Concluding Remarks

With support from both public and private institutions, ICTP-SAIFR has grown into the premier theoretical physics institute in South America.



Online activities allow wide participation and will continue after the pandemic

Bureaucracy and lack of long-term planning are nuisances, but Brazil is a dynamical country where creative ideas can produce rapid changes.