

# 1<sup>st</sup> Workshop on Topological Quantum Phenomena and Quantum Information Science

[www.ifsc.usp.br/topophenomena-infoscience-workshop](http://www.ifsc.usp.br/topophenomena-infoscience-workshop)

**Date:** July 24 – 28, 2017

**Venue:** Institute of Physics of São Carlos, University of São Paulo, São Carlos/SP, Brazil

**Organizing Committee:** Diogo S. Pinto, Eric C. Andrade, Sérgio R. Muniz, J. Carlos Egues (IFSC/USP)

## About the workshop:

Topological quantum matter lies at the interface between condensed matter physics and elementary particle physics and allows an interesting and fruitful cross-fertilization of ideas. Condensed matter can offer unique settings in which to investigate, for instance, physics beyond the Standard Model (e.g., type II Weyl particles that break Lorentz invariance). Similarly, the field of quantum information science is very broad encompassing a number of fundamental themes such as quantum many-body theory, quantum complexity, and topological quantum computing. This workshop will bring together world-class experts presenting tutorials and talks on a variety of related topics to prospective and beginning graduate students (MSc. & PhD). **All accepted students will receive full coverage (i.e., room and board plus travel expenses).**

## Topics to be covered:

- Topological insulators (2D and 3D)
- Spin entanglement
- Quantum complexity theory and quantum algorithms
- Quantum information theory
- Majorana Fermions in topological superconductors
- Weyl fermions in novel materials
- Quantum computing with quantum optics
- Quantum spintronics
- Diamond quantum photonics
- Thermodynamics of quantum systems
- Open quantum system dynamics
- Sensing and magnetometry at quantum limit

## Invited Speakers

**Ewelina Hankiewicz** (University of Würzburg)

**Mauro Paternostro** (Queen's University Belfast)

**Victor M. Acosta** (University of New Mexico)

**Shuichi Murakami** (Tokyo Institute of Technology)

**Diogo S. Pinto** (IFSC/USP)

**J. C. Egues** (IFSC/USP)

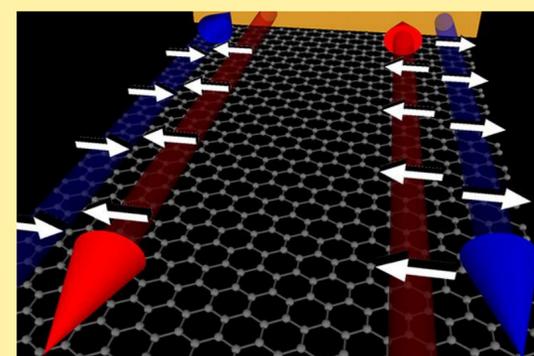
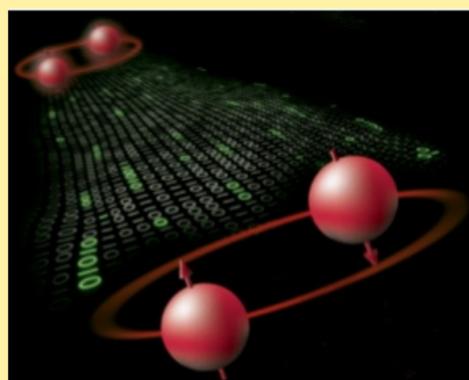
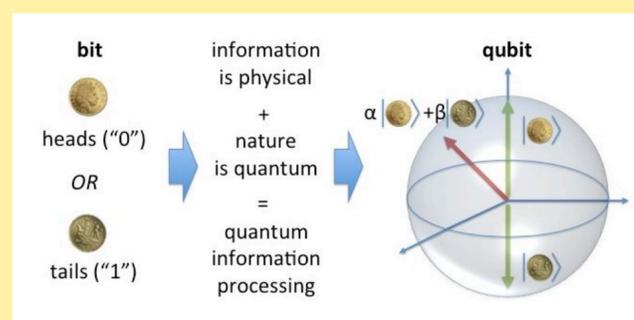
**Sérgio R. Muniz** (IFSC/USP)

**Luis G.G. D. Silva** (IFUSP)

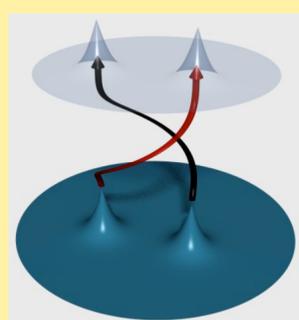
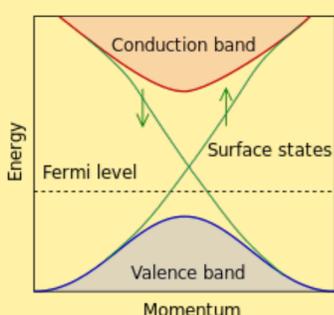
**Eric C. Andrade** (IFSC/USP)

**Rafael Chaves** (IIP/UFRN)

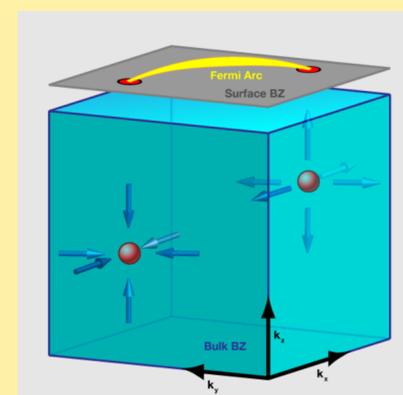
**Rodrigo Pereira** (IIP/UFRN)



Nature **505**, 528 (2014)



Marcel Franz



Physics **4**, 36 (2011)

