

# **2nd World Summit on Exploring the Dark Side of the Universe**

**Monday, June 25, 2018 - Friday, June 29, 2018**

**Guadeloupe islands**

## **Scientific Program**

# Programme

## Opening: Welcome and questions to be addressed at this workshop

### Session 1 : The cosmos as a particle detector:

- CMB status and prospects
- Supernovae status and prospects
- Weak lensing status and prospects
- Galaxy Clustering and BAO status and prospects
- Gravitational Waves status and prospects
- Multi-messengers astronomy status and prospects
- Round table: How to combine results from different observations?

### Session 2: Dark Matter

- Dark Matter status and prospects
- Status of astrophysical searches for dark matter
- General review theory
- Review of light Dark Matter: is axion a good candidate?
- Theoretical review on neutrino cosmology
- Neutrino detectors status and prospects
- Direct DM searches
- Indirect DM searches
- Light Dark Matter at accelerators
- DM searches at LHC
- Extra dimension and DM
- Round table: Dark matter or something else?

### Session3: Dark Energy

- Evidence for accelerated expansion of the Universe: current observations
- Large scale structure of the Universe and future experiments for Dark Energy (Euclid, LSST, SKA, ..)
- The Physics of Cosmic Acceleration: Theory review
- Concordance model and tension in the Hubble constant
- Concordance Cosmology without Dark Energy
- Is expansion simulated by the structure of the Universe?
- Round table about the expansion of the Universe

### Session 4: Gravity and black holes

- What can we learn from LIGO/VIRGO results?
- Black holes and quantum information
- Black holes, wormholes and quantum entanglement
  
- Emergent gravity? to be or not to be?

## Concluding remarks

# Confirmed Speakers

Aaron Vincent (Queen's University)

Adam Riess (Johns Hopkins University)

Aldo Morselli (INFN Roma Italy)

Alexander Belyaev (Southampton University and Rutherford Lab)

Andrei Linde (Stanford University)

Anne Ealet (CPPM Marseille)

Archil Kobakhidze (University of Sydney)

Brian Humensky (University of Columbia)

Bruce Hoeneisen (University of San Francisco de Quito)

Christophe Royon (University of Kansas)

Christoforos Kouvaris (University of Southern Denmark)

Danielle Leonard (Carnegie Melon University)

Diego Guadagnoli (LAPTH Annecy)

Eric Charles (SLAC)

Francesca Vidotto (University of the Basque Country)

François Bouchet (Institut d'Astrophysique de Paris)

Frederic Henry-Couannier (CPPM Marseille)

Gérman Gómez-Vargas (Pontifical Catholic University of Chile)

Gilles Gerbier (Queen's University)

Guillermo Gomez-Ceballos (Massachusetts Institute of Technology)

Ian G. Moss (University of Newcastle)

Juan Antonio Aguilar Sánchez (University of Genève)

Juan Garcia-Bellido (University of Madrid)

Justin Williams (University of Kansas)

Laura Cadonati (Georgia Institute of Technology)

Laurent Chevallier (CEA Saclay)

Marcel Carena (Fermilab)

Marcello Messina (University of New-York)

Marian Douspis (IAPS Université Paris-Sud)

Mario Martinez Perez (IFAE University of Barcelona)

Mark Messier (Indiana University)

Mike Albrow (Fermilab)

Michael Rigault (Institut de Physique Nucléaire de Lyon)

Nick Gorkavyi (SSAI NASA)

Renata Kallosh (Stanford University)

Serguey Petcov (SISSA Italy)

Shinhong Kim (University of Tsukuba)

Stephane Coutu (Pennsylvania State University)

Stefano Profumo (University of California, Santa Cruz)

Sougato Bose (University College of London)

Thomas Buchert (Institut de Physique Nucléaire de Lyon)

Tim Eifler (JPL NASA)

Tommaso Dorigo (INFN Padova)

Vincent Vitali (DESY)

Wei Wang (University of Nanjing)

Xavier Bertou (CNEA Argentina)

Yasunori Nomura (University of Berkeley)