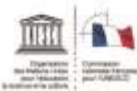




GUADELOUPE 25 -29 JUNE 2018

2nd World Summit on :  
**EXPLORING THE DARK SIDE  
OF THE UNIVERSE**

- SCIENTIFIC PROGRAMME -



Sous le patronage de la Commission nationale française pour l'UNESCO

## **Monday June 25<sup>th</sup> 2018**

Amphitheatre “Mérault” – University of the Antilles – Fouillole Campus

*Bus transfer departs Hotel Salako at 7:15 and Hotel Fleur d’Epee at 7:30.*

### ***Opening***

- **08:00** Registration
- **09:00** Welcome – Regional Council of Guadeloupe
- **09:15** Welcome – Pr. Eustase Janky, President of the University of the Antilles
- **09:30** Review on departments activities in the Faculty of Sciences – Alain Pietrus (Dean)
- **09:45** Welcome and practical information – Betty Calpas (Technical University Prague)
- **10:00** Questions to be addressed at this workshop – Pierre Pétroff (LAL IN2P3/CNRS)
- **10:20** Coffee break

### ***Session 1 – The cosmos as a particle detector***

- **10:45** CMB: The Planck experiment status and prospects 30’+5’ François Bouchet (IAP Paris)
- **11:20** Supernovae status and prospects 30’ + 5’ Mickael Rigault (IPNL Lyon)
- **11:55** Weak lensing status and prospects 30’ + 5’ Danielle Leonard (Carnegie Mellon University)
- **12:30** Lunch

- **13:30** Galaxy Clustering and BAO: status and prospects 30' + 5'  
Bruce Hoeneisen (University San Francisco de Quito)
- **14:05** Gravitational Waves status and prospects 40'+5'  
Laura Cadonati (Georgia Institute of Technology)
- **14:50** Coffee break
- **15:20** Gamma rays signature of dark matter in the CTA era 30'+5'  
Aldo Morselli (INFN Rome)
- **15:55** Interplay between Cosmology, Particle Physics and Astrophysics 30'+5'  
Aaron Vincent (Queen's University)
- **16:30** Multi-messengers astronomy status and prospects 30'+ 5'  
Brian Humensky (Columbia University)

*End of session 1 at 17:05, bus departs campus at 17:15.*

**18:30** Welcome party – Mémorial ACTe (Pointe-à-Pitre)

*Bus transfer departs Hotel Salako at 18:00 and passes by Hotel Fleur d'Epée around 18:15. Return bus is planned to depart Mémorial ACTe at 21:00.*

## Tuesday June 26<sup>th</sup> 2018

Amphitheatre "Mérault" – University of the Antilles – Fouillole Campus

*Bus transfer departs Hotel Salako at 7:15 and Hotel Fleur d'Epee at 7:30.*

### **Session 2 – Dark Matter**

- **08:00** Dark Matter a critical review (Theory) 30' + 5'  
Marcela Carena (Fermilab)
- **08:35** Higgs Cosmology and Dark Matter 30' + 5'  
Ian G. Moss (University of Newcastle)
- **09:10** Direct DM detection and its interplay with Collider searches in decoding the nature of Dark Matter 30'+5'  
Alexander Belyaev (Southampton University and Rutherford Lab)
- **09:45** Indirect DM Searches status and prospects 30'+5'  
Eric Charles (SLAC)
- **10:20** Coffee break 30'
- **10:50** DM searches at ATLAS status and prospects 30'+5'  
Mario Martinez Perez (IFAE Barcelona)
- **11:25** DM searches at CMS status and prospects 30'+5'  
Guillermo Gomez-Ceballos (MIT)
- **12:00** CMS searches for Dark Matter with Heavy Quarks or Jets 20'+5'  
Tommaso Dorigo (INFN Padova)
- **12:35** Lunch
- **14:00** Unravelling the mystery of dark matter annual modulation  
Davide d'Angelo (University of Milan) 30'+5'

- **14:35** Most recent results from XENON1T dark matter detector 30'+5'  
Marcello Messina (University of New York)
- **15:10** The DM Puzzle: Are WIMPS still alive? 40'+5'  
Gilles Gerbier (Queen's University)
- **15:55** Coffee break 30'
- **16:25** Round table: Dark matter or something else? 60'  
moderated by Gilles Gerbier and Kazuhiko Hara

*End of session 2 at 17:25, bus departs campus at 17:35.*

**18:30 Popular Science Lectures 1** (in French) :

« L'Histoire de l'Univers Reconstituée »

François Bouchet (Astrophysicien à l'Institut d'Astrophysique de Paris)

Amphitheatre "Mérault" – University of the Antilles – Fouillole Campus

## Wednesday June 27<sup>th</sup> 2018

Amphitheatre "Mérault" – University of the Antilles – Fouillole Campus

*Bus transfer departs Hotel Salako at 7:15 and Hotel Fleur d'Epee at 7:30.*

### **Session 2 – Dark Matter (follow up)**

- **08:00** Probing New Parameter Space in Dark Matter Detection 20'+5' –  
Christoforos Kouvaris (University of Southern Denmark)
- **08:25** Search for Ultra-low Mass Dark Matter 30'+5'  
Laurent Chevalier (CEA Saclay)
- **09:00** DM and extra dimension 30'+5'  
Christophe Royon (University of Kansas)

### **Session 3 – Neutrino Cosmology**

- **09:35** B-physics anomalies, Lepton Universality Violation and Cosmology 30'+5'-Diego Guadagnoli (LAPTH Annecy)
- **10:10** Coffee Break 30'
- **10:40** Leptonic CP Violation and matter-antimatter in the Universe 30' + 5'  
Serguey Petcov (SISSA Italy)
- **11:15** Constraints on neutrino masses from cosmological observations 15'+5'  
Bruce Hoeneisen (University San Francisco de Quito)
- **11:45** Neutrino detectors status and prospects 40' + 5'  
Mark Messier (NOvA)
- **12:30** Lunch

- **13:45** Multimessenger astrophysics: the ultrahigh-energy picture with the Pierre Auger Observatory 30'+5'  
Stephane Coutu (Pennsylvania State University)
- **14 :20** ANDES project 25' + 5'  
Xavier Bertou (Pierre Auger Observatory and ANDES)
- **14:50** Neutrino telescope: IceCube results and prospects 25' + 5'  
Juan Antonio Aguilar Sánchez (Université Libre de Bruxelles)
- **15:20** *End of Neutrino cosmology session*  
**Coffee Break**

### ***“Young Physicists session”***

- **15:50** The Key Science Projects of the Cherenkov Telescope Array 25'+5'  
Germán Gómez-Vargas (Pontifical Catholic University of Chile)
- **16:20** ATLAS search for dark matter produced in association with a hadronically decaying vector boson 10'+5'  
Wei Wang (Nanjing University)
- **16:35** ATLAS search for an invisibly decaying Higgs boson produced via vector boson fusion 10'+5'  
Vincent Kitali (DESY)
- **16:50** CMS CT-PPS physics results and prospects 10'+5'  
Justin Williams (University of Kansas)

*End of 'young physicists session' at 17:05, bus departs campus at 17:15.*

**19:00 - Conference Dinner** – Restaurant « La Cabane du pêcheur » - Hotel Fleur d'Épée (Gosier)

*Bus transfer departs Hotel Salako at 18:45. Return to hotel Salako approximately 22:30.*

## Thursday June 28<sup>th</sup> 2018

Amphitheatre "Mérault" – University of the Antilles – Fouillole Campus

*Bus transfer departs Hotel Salako at 8:00 and Hotel Fleur d'Epee at 8:15.*

### **Session 4 – Dark Energy**

- **08:45** Evidence for accelerated expansion of the Universe: current observations 40' + 5'  
Tim Eifler (JPL Nasa)
- **09:30** Large scale structure of the Universe and future experiments for Dark Energy (Euclid, LSST, SKA,...) 40'+5'  
Anne Ealet (CPPM Marseille EUCLID)
- **10:15** coffee break 30'
- **10:45** Tachyons as Dark Energy Quanta? 25' + 5'  
Mike Albrow (Fermilab)
- **11:15** Concordance model and tension in the Hubble constant 40'+5'  
Adam Riess (Johns Hopkins University)
- **12:00** Lunch
- **14:00** On the tension between Large Scale Structures and CMB 35'+5'  
Marian Douspis (IAS University of Paris-Sud)
- **14:40** Is Dark Energy simulated by structure formation in the Universe? 40'+5'  
Thomas Buchert (CRAL Lyon)
- **15:25** Dark energy Acceleration of the Universe with Variable Gravitational Mass 35'+5'  
Nick Gorkavyi (SSAI NASA)



- **16:05** Coffee break 30'
- **16:35** Reverse Engineering of the Universe 40'+5'  
Andrei Linde (Stanford University)

*End of Session 4 at 17:20, bus departs campus at 17h30.*

**18:30 Popular Science Lectures 2** (in French) :

« L'Univers est-il une illusion ? »

David Elbaz (Astrophysicien au CEA de Saclay)

Amphitheatre "Mérault" – University of the Antilles – Fouillole Campus

## Friday June 29<sup>th</sup> 2018

Amphitheatre “Mérault”– University of the Antilles – Fouillole Campus

*Bus transfer departs Hotel Salako at 7:15 and Hotel Fleur d’Epee at 7:30.*

### **Session 5 – Black Holes and Gravity**

- **08:00** Exploring fundamental Physics with Gravitational Waves 40'+5'  
Archil Kobakhidze (University of Sydney)
- **08:45** Primordial Black holes 40'+5'  
Juan Garcia-Bellido (University of Madrid)
- **09:30** Supergravity and Cosmology 40'+5'  
Renata Kallosh (Stanford University)
- **10:15** Coffee break 30'
- **10:45** Eternally inflating multiverse and many worlds in quantum mechanics: same concept? 35'+5'  
Yasunori Nomura (University of Berkeley)
- **11:25** Testing the Quantum Coherent Behavior of Gravity 35'+5'  
Sougato Bose (University College of London)
- **12h05** Lunch
- **14:00** Quantum Insights on Primordial Black Holes as Dark Matter 25'+5'  
Francesca Vidotto (University of Basque Country)
- **14:30** The dark side of gravity and the acceleration of the Universe 25'+5'  
Frederic Henry-Couannier (CPPM Marseille)

- **15:00** Coffee break

### ***Concluding remarks***

- **15 :30** Dark Matter  
Eric Charles (SLAC)
- **16 :00** Dark Energy  
Tim Eifler (JPL NASA)
- **16:30** Cosmology (Neutrino, Gravity and Black Holes)  
Yasunori Nomura (University of Berkley)

*End of conference at 17:10, bus departs campus at 17:20.*

## **Saturday, June 30th 2018**

*Departure from Hotels at approximately 9:00 and return around 18:00.*

An excursion in the north of Basse-Terre is planned with the following itinerary:

Departure from Hotels in Gosier (Salako and Fleur d'Epee), heading towards Parc National de la Guadeloupe (National parc) through the Route de la Traversée.

Stop at Cascade aux Ecrevisses, a popular waterfall, set in heavenly tropical surroundings. 10 minutes' easy walk away from the main road.

Visit the Guadeloupe Zoo, located in the heart of the tropical forest, where the fauna and the flora are awaiting. Canopy tree walk on 20m high footbridges (*€15 cover for adults not included*).

As an option, and according to available time, make a stop at the Plage de la Perle in Deshaies. Lunch break at the beach: fast food, snack or restaurants available (*5-15€ price range, not incl.*). Local artisanal coconut ice-cream (*2€, not incl.*)

Back to Le Gosier via Sainte Rose.

As an option, make a stop at Domaine Severin Rum Distillery in Sainte Rose (*7€, not incl.*), where you will discover the process of rum distillation. At the end of the visit you will be able to enjoy a rum tasting.

**Sign up for this excursion needs to be done with Betty Calpas before Wednesday the 27<sup>th</sup> at 13:00.**