

VULCANO WORKSHOP 2018

May 20-26, Vulcano, Italy

FRONTIER OBJECTS IN ASTROPHYSICS AND PARTICLE PHYSICS



May 25, 2018

Scientific Program

Monday, May 21st

- 8:45 R. Fusco Femiano
G. Mannocchi Welcome address
- 9:00 G. Parisi Scientific and personal Recollections of Aurelio Grillo

Gravitational Waves/Multimessenger

Chair: L. Iess

- 9:25 M. A. Papa Introduction to GW and Gravity
- 9:50 V. Fafone The dawn of Gravitational Waves Astronomy
- 10:15 A. Chieffi Formation of stellar BHs and origin of binary systems
- 10:40 *Coffee Break*

Chair: M. A. Papa

- 11:00 M. Branchesi Multimessenger Astrophysics: The new era of GWs
- 11:25 C. Kopper Neutrinos in the multimessenger era
- 11:50 C. L. Fryer Origin of heavy elements from GW events
- 12:15 H. Van Eerten Theory of off-axis GRBs and GW events
- 12:40 *END*
- 13:30 *Lunch*

Astrophysics/Cosmology

Chair: M. Branchesi

- 17:00 L. Iess Testing gravity with the BepiColombo mission
- 17:25 O. Straniero Stellar Nucleosynthesis
- 17:50 E. Brocato Kilonovae observations
- 18:15 R. Dolesi GW with LISA-Pathfinder and e-LISA
- 18:40 C. Gustavino BBN, Neutrinos and Nuclear Astrophysics

Future Projects

Chair: R. Shellard

- 19:05 L. Linssen Future projects at CERN
- 19:30 *END*
- 20:30 *Dinner*

Tuesday, May 22nd

Cosmic Rays, Neutrino & Gamma Rays

Chair: A. Capone

- 9:00 J. Goodman Photons in the multimessenger era
- 9:25 G. Morlino Cosmic rays in the multimessenger era
- 9:50 F. Aharonian The connection between gamma rays and CRs
- 10:15 A. Lamastra AGN outflows as accelerator of CRs and neutrinos
- 10:40 *Coffee Break*

Chair: F. Aharonian

11:00	B. Dingus	Recent results from HAWC
11:25	I. Gebauer/M. Vecchi	Review on direct measurements of CRs
12:00	F. Longo	Gamma-ray Physics in the Fermi era
12:25	C. Pittori	Highlights from AGILE
12:50		<i>END</i>
13:30		<i>Lunch</i>

Cosmic Rays, Neutrino & Gamma Rays**Chair: M. Vecchi**

17:00	P. S. Marrocchesi	CALET Experiment
17:25	V. de Souza	Recent results from AUGER
17:50	M. Bertaina	Search for UHE Cosmic Rays from space – the JEM-EUSO program

Astrophysics/Cosmology**Chair: O. Straniero**

18:15	M. Burgay	Detection and origin of Fast Radio Bursts
18:40	F. Nicastro	Missing baryons and cosmological filaments from X-rays
19:05	P. Klimov	Recent results from the TUS/LOMONOSOV Space Mission
19:30		<i>END</i>
20:30		<i>Dinner</i>

Wednesday, May 23rd

Dark Matter & Dark Energy**Chair:**

9:00	A. Nierenberg	Hints on the nature of DM from gravitational lensing
9:25	S. Capozziello	Beyond Einstein's Gravity
9:50	M. Castellano	Constraints on the nature of DM from the abundance of extremely distant galaxies
10:15	A. Ferella	Dark Matter Direct Detection Experiments
10:40		<i>Coffee Break</i>
11:00	E. Aprile	The XENON1T Dark Matter Search at LNGS: Results and Prospects

Chair: S. Capozziello

11:25	L. Di Noto	Low energy solar neutrinos with Borexino
11:50	S. Dell'Oro	A review on neutrinoless double beta decay
12:15	M. Messina	PTOLEMY: Relic Neutrino Detection

Future Projects

12:40	R. Shellard	LATTES project
13:05		<i>END</i>
13:30		<i>Lunch</i>
15:00		<i>Visit to Lipari Archeological Museum</i>
20:30		<i>Dinner</i>

Thursday, May 24th

Cosmic Rays, Neutrino & Gamma Rays**Chair: G. Bertone**

9:00	A. Capone	Observations of HE Neutrino in the multimessenger Prospects
9:25	S. Buson	Flaring blazar and high-energy neutrinos
9:50	M. Circella	ANTARES and KM3NeT experiments: status and future developments
10:15	R. Iuppa	Antimatter in CRs
10:40		<i>Coffee Break</i>

Chair: B. Dingus

11:00	Z. G. Yao	Status of the LHAASO experiment
11:25	A. Petrukhin	Nucleus-Nucleus interactions at LHC and in cosmic rays
11:50	E. Bissaldi	GBM and GW
12:15	A. Morselli	The Cherenkov Telescope Array Project: current status and science goals
12:40	P. Desiati	CR anisotropy
13:05		<i>END</i>
13:30		<i>Lunch</i>

Cosmic Rays, Neutrino & Gamma Rays**Chair: J. Goodman**

17:00	J. C. Diaz Velez	Anisotropy with HAWC and IceCube
17:25	P. Ubertini/L.Natalucci	Integral discovery of GRB from Neutron Stars coalescence
17:40	L. Natalucci	AHEAD, High Energy Astrophysics H2020 infrastructure

Gravity**Chair: A. Nierenberg**

18:05	F. Fiore	Quantum gravity constraints from electromagnetic domain
18:30	S. Dell'Agnello	Tests of gravity in the solar system
18:55	M. T. Crosta	Testing gravity with GAIA
19:20		<i>END</i>
20:30		<i>Dinner</i>

Friday, May 25th

Astrophysics/Cosmology**Chair: E. Brocato**

9:00	E. Battistelli	CMB observations: implications for inflation and early universe
9:25	G. Prodi	Emission of Gravitational Waves from the BH coalescence
9:50	A. Corsi	Radio counterparts from GW events
10:15	L. Piro	The hot energetic universe with Athena
10:40		<i>Coffee Break</i>
11:00	E. Troja	Discovery of the X-ray counterpart and the GW - GRBs connection

Dark Matter

11:25	G. F. Bertone	New strategies in the quest for dark matter
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Particle Physics**Chair: L. Pontecorvo**

11:50	M. Borsato	Search for dark matter at LHC
12:15	B. Dobrich	Search for dark matter at fixed target, status and prospects
12:40	M. Incagli	The Muon g-2 experiment at Fermilab
13:05		<i>END</i>
13:30		<i>Lunch</i>

Particle Physics**Chair: B. Dobrich**

17:00	M. Pospelov	Dark sector in accelerators
17:25	M. Raggi	The PADME experiment
17:50	M. Moulson	Results and future projects on KL→pi nu nu
18:15	G. Ruggiero	NA62 first result on K → pi nu nu
18:40	L. Pontecorvo	Highlights on Atlas and CMS
19:05	V. Vagnoni	Highlights on LHCb
19:30		<i>END</i>
20:30		<i>Dinner</i>

Saturday, May 26th

Future Projects

Chair: V. Vagnoni

9:00	C. Signorini	Overview of ESA science missions
9:25	E. Cavazzuti	ASI programs for HE Astrophysics
9:50	N. Pastrone	The Muon Collider
10:15	M. Ferrario	LNF new projects
10:40		<i>Coffee Break</i>
11:00	A. Olinto	The space mission POEMMA: Probe of Extreme Multi-Messenger Astrophysics
11:25	U. Kose	The Research Activities within CERN Neutrino Platform
11:50		<i>Concluding Remarks</i>
12:00		<i>END</i>
13:00		<i>Lunch</i>