

VULCANO WORKSHOP 2004

May 24-29, Vulcano, Italy

FRONTIER OBJECTS IN ASTROPHYSICS AND PARTICLE PHYSICS



Vulcano Workshop 2004 23rd-29th May Frontier Objects in Astrophysics and Particle Physics

FINAL PROGRAM (TENTATIVE)

Sunday 23 Afternoon

16.30	Registration of Participants
19.00	End of Registration
19.30	Welcome Cocktail Party
20.00	Dinner

Monday 24 Morning

08.30 FRANCO GIOVANNELLI &
GIAMPAOLO MANNOCCI Welcome Address

OPENING REMARKS

Chairperson: JANUSZ ZIOLKOWSKI

08.35 FRANCO GIOVANNELLI Hot Problems on Astroparticle Physics Today.
09.10 GIULIO AURIEMMA Models of Baryogenesis.
09.45 GIULIO D'AGOSTINI From Observations to Hypotheses: Probabilistic Reasoning versus Falsificationism (and its Statistical Variations).

10.20 *Coffee Break*

Chairperson: GOTTFRIED KANBACH

10.50 FERNANDO FERRONI CP Violation in B-physics.
11.25 LAWRENCE JONES Where Astroparticle Physics Goes?

12.00 *END OF SESSION*

COSMOLOGY (THE DARK UNIVERSE)

12.00 ROBERTO FUSCO FEMIANO Non Thermal X-ray Emission from Clusters of Galaxies.
12.35 DORIS NEUMANN New Results of Clusters of Galaxies Observed by XMM-Newton.

12.55 *Interval*

Monday 24 Afternoon

COSMOLOGY (THE DARK UNIVERSE)

Chairperson: LAWRENCE JONES

17.00 EUGENIO COCCIA Science at INFN Gran Sasso Laboratory.
17.35 GENNADI BISNOVATYI-KOGAN Dark Matter Structures, and Emission of Very Long Gravitational Waves.
18.10 ALESSANDRO VARIOLA Towards Cold Anti-hydrogen Spectroscopy.

18.30 *Interval*

OPENING REMARKS (postponed talk)

Chairperson: GENNADI BISNOVATYI-KOGAN

18.30 GUIDO PIZZELLA The Gravitational Active Universe.
19.05 EUGENIO COCCIA Which Galactic Gravitational Wave Sources are Detectable Today?

19.25 *END OF SESSION*

SPECIAL NIGHT SESSION

Chairperson: GENNADI BISNOVATYI-KOGAN

21.30 LARRY PINSKY Models of the Space Radiation (GCR + Solar) Environment within the Solar System: NASA Study for Planning Manned Space Missions.

22.15 *END OF SESSION*

Tuesday 25 Morning

COSMOLOGY (THE DARK UNIVERSE)

Chairperson: DORIS NEUMANN

- 09.00 FRANCESCA MATTEUCCI Chemical Enrichment of Intracluster and Intergalactic Medium.
09.35 NINO PANAGIA High Redshift Supernovae: Cosmological Implications.
10.10 RITA BERNABEI Signature for Signals from the Dark Universe.
10.45 *Coffee Break*

Chairperson: GIULIO AURIEMMA

- 11.15 DANIEL DENEGRI LHC Physics: Cold Dark Matter Searches at LHC.
11.50 ALDO MORSELLI Search for Dark Matter with Space Experiments.
12.25 CARLO BROGGINI Results from the LUNA Experiment: Implications on Astroparticle Physics and Cosmology.
12.45 *END OF SESSION*

Tuesday 25 Afternoon

GAMMA RAY BURSTS

Chairperson: DANIEL DENEGRI

- 16.30 KEVIN HURLEY Cosmic Gamma Ray Bursts – The Latest Development.
17.05 ARNON DAR Gamma Ray Bursts – Theoretical Review.
17.40 DANIELE FARGION Gamma Ray Bursts by Beamed Precessing Supernova Jets.
18.00 SHLOMO DADO On the GRB-SN Association.
18.20 GUIDO BARBIELLINI AMIDEI GRB: A Luminous Candle?
18.55 *END OF SESSION*

COSMOLOGY (THE DARK UNIVERSE) (Postponed talk)

Chairperson: TIINA SUOMIJARVI

- 18.55 SERGIO COLAFRANCESCO Dark Matter and Large Scale Structures.
19.30 SERGIO COLAFRANCESCO Cosmic Background and Large Scale Structures.
19.50 *END OF SESSION*

Tuesday 25 Night

22.00 THEATRE PERFORMANCE AT EOLIAN HOTEL

FLAVIA GIOVANNELLI
& EMANUELA GIOVANNINI “Permettete...?!”

23.00 *END OF PERFORMANCE*

Wednesday 26 Morning

ASTROPHYSICS OF HIGH ENERGY COSMIC SOURCES

Chairperson: KEVIN HURLEY

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| 08.15 | GOTTFRIED KANBACH | Gamma Ray Pulsars: Multiwavelength Aspects and New Theoretical Concepts. |
| 08.50 | WLODEK BEDNAREK | Gamma Rays and Neutrinos from the Pulsar Wind Nebulae. |
| 09.25 | WLODEK BEDNAREK | Gamma Rays from Massive Stellar Associations. |
| 09.45 | YUZURU TAWARA | Interacting Molecular Gas toward the TeV Gamma-Ray Peak of the SNR G 347.3-05. |
| 10.05 | YOSHIAKI MORIGUCHI | A Large Scale Molecular Survey toward the Southern Galactic SNRs. |
| 10.25 | | <i>Coffee Break</i> |

Chairperson: FRANCESCA MATTEUCCI

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| 10.50 | FRANCO GIOVANNELLI | X-Ray Binary Systems: A Laboratory for High Energy Processes. |
| 11.20 | JANUSZ ZIOLKOWSKI | Galactic Collapsed Objects. |
| 11.50 | ARNON DAR | Magnetars, Anomalous X-Ray Pulsars and Strange Quark Stars. |
| 12.20 | GIANLUCA ISRAEL | The Broad Band Energy Spectrum of Anomalous X-Ray Pulsars. |
| 12.40 | LUCIANO BURDERI | Accretion and Ejection Phenomena in Millisecond Binary Pulsators |
| 13.00 | TIZIANA DI SALVO | Constraints on the Neutron Star Magnetic Fields in LMXBs |
| 13.20 | | <i>END OF SESSION</i> |

Wednesday 26 Afternoon

FREE

Wednesday 26 Night

21.30 **ETRUSCAN WINE PARTY**

Thursday 27 Morning

THE CHALLENGE OF COSMIC RAY PRODUCTION

Chairperson: ELENA APRILE

- 08.30 ARNON DAR Origin of Cosmic Rays.
09.05 JACEK NIEMIEC Relativistic Shocks and Ultra High Energy Cosmic Ray
Origin
09.40 TIINA SUOMIJARVI The First AUGER Data: Perspectives on EHE Cosmic
Rays.
10.15 *Coffee Break*

Chairperson: GIULIO D'AGOSTINI

- 10.45 TODOR STANEV Hadronic Intercations in Geant Air Showers.
11.20 GIANNI NAVARRA The Cosmic Ray Spectrum at the Knee.
11.55 JOERG HOERANDEL The Composition of Cosmic Rays at the Knee.
12.30 LAWRENCE JONES Final Results from the L3-Cosmic Study of 20-3000
GeV Cosmic Ray Muons.
12.50 ANATOLY ERLYKIN Are There Pulsars in the Knee?
13.10 *Interval*

Thursday 27 Afternoon

THE CHALLENGE OF COSMIC RAY PRODUCTION

Chairperson: ANATOLY ERLYKIN

- 17.00 MICHELANGELO AMBROSIO A New Topological Multiparametric Method for
Determining the Primary Mass Cosmic Ray Composition
in the Knee Region.
17.20 ANATOLY PETRUKHIN Unusual Events at PeV Energy Cosmic Rays and their
Possible Interpretation.
17.40 DANIELE FARGION New High Energy Cosmic Rays and Lepton
Horizontal Astronomies Shadows of SUSY?
18.00 *END OF SESSION*

PHENOMENOLOGY OF QUANTUM THEORY

Chairperson: DANUTA KIELCZEWSKA

- 18.00 AURELIO GRILLO UHE Cosmic Rays and Planck Scale Phenomenology.
18.35 Y. JACK NG Spacetime Fluctuations.
19.10 GIOVANNI AMELINO CAMELIA Phenomenology of Doubly-Special Relativity.
19.45 *END OF SESSION*

Thursday 27 Night

22.00 **MUSIC IN VULCANO**

ALESSANDRO PERPICH
&
MARCO DALSASS Violin and Cello Concert

23.00 *END OF CONCERT*

Friday 28 Morning

NEUTRINO ASTRONOMY

Chairperson: ARNON DAR

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| 09.00 | DANUTA KIELCZEWSKA | Results from Super-Kamiokande and K2K Experiments. |
| 09.35 | GIUSEPPE BATTISTONI | Measuring Neutrino Oscillation Parameters with the Liquid Argon Detector Technology. |
| 09.55 | DANIELE FARGION | Rates of Upward Tau Air-Showers Induced by the Highest Energy Neutrinos. |
| 10.15 | PAOLO LIPARI | What Can we Learn from UHE Cosmic Rays, Gamma, and Neutrino Astronomy. |
| 10.50 | | END OF SESSION |
| 10.50 | | Coffee Break |

DIRECTION FOR NEXT GENERATION EXPERIMENTS

Chairperson: ANATOLY PETRUKHIN

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| 11.20 | ANTONIO CAPONE | High Energy Neutrino Astrophysics with NEMO Experiment: Status Report. |
| 11.35 | RICCARDO CERULLI | The New DAMA/LIBRA and Beyond. |
| 11.50 | INES GIL BOTELLA | Detection of Supernova Neutrinos with Future Liquid Argon TPC Detectors. |
| 12.05 | CHANTAL RACCA | The ANTARES Neutrino Telescope: Status and Perspectives. |
| 12.20 | SILVIA CAPELLI | Results from the CUORICINO Experiment and Perspectives for the CUORE Project. |
| 12.35 | ELENA APRILE | The XENON Dark matter Search. |
| 12.50 | | Interval |

Friday 28 Afternoon

DIRECTION FOR NEXT GENERATION EXPERIMENTS

Chairperson: PAOLO LIPARI

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| 17.00 | PIERO SPILLANTINI | From the Extreme Universe Space Observatory (EUSO) to the Extreme Universe Neutrino (EUN) |
| 17.30 | PIERO GALEOTTI | The Extreme Energies in the Universe: The EUSO Experiment. |
| 17.45 | DAVIDE GRANDI | AMS: A cosmic Ray Spectrometer on the ISS |
| 18.00 | EMANUELE FIANDRINI | High Energy Cosmic Ray Studies with the AMS02 Spectrometer: Status and Perspectives. |
| 18.15 | LAWRENCE JONES | Study of the Cosmic Ray Energy Spectrum and Primary Composition Near the "Knee" with the GAMMA Array on Mt. Aragats. |
| 18.35 | ANDREA CHIAVASSA | The KASCADE-Grande Experiment (KASCADE-Grande Collaboration). |
| 18.55 | BRUNO ALESSANDRO | Cosmic Ray Physics with the ALICE Detectors |
| 19.10 | CLAUDIA CECCHI | High Energy Gamma Rays with GLAST. |
| 19.30 | | Interval |

Saturday 29 Morning

DIRECTION FOR NEXT GENERATION EXPERIMENTS

Chairperson: GUIDO BARBIELLINI

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| 09.00 | GOTTFRIED KANBACH | MEGA: A Next Generation telescope for Medium-Energy Gamma-Ray Astronomy. |
| 09.20 | ELENA APRILE | Measurement of cosmic Gamma Rays with Balloon-Borne Compton Telescope LXeGRIT. |
| 09.40 | ANGELO ANTONELLI | The REM Telescope: A Robotic Facility to Follow up GRBs and Fast Variable Objects. |
| 09.55 | MIRIAM GIORGINI | A Possible Search for a Very Rare Process: A Spontaneous Emission of Muons from Heavy Nuclei. |
| 10.10 | ADALBERTO PICCIONI | FAMUPHO (FAst MULTichannel PHOtometer) – An Optical Facility for Measuring Rapid Phenomena in Optical Counterpart of High Energy Cosmic Sources: The Case of the Light Curve Morphology of the Intermediate Polar TT Arietis. |
| 10.35 | | <i>Coffee Break</i> |
| 11.05 | NINO PANAGIA | From the Hubble Space Telescope to the James Webb Space Telescope. |
| 11.40 | | <i>END OF SESSION</i> |

CONCLUDING REMARKS

Chairperson: NINO PANAGIA

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| 11.40 | FIRST SPEAKER |
| 11.55 | SECOND SPEAKER |
| 12.10 | THIRD SPEAKER |
| 12.25 | FOURTH SPEAKER |

12.40 ***END OF SESSION***

CONCLUDING ADDRESS

Chairperson: NINO PANAGIA

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| 12.40 | FRANCO GIOVANNELLI | Concluding Address |
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13.00 END OF THE WORKSHOP