

# **Advances in Modeling High-Energy Astrophysical Sources: Insights from recent multimessenger discoveries**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Introduction to the workshop

*Monday, 30 June 2025 10:00 (15 minutes)*

**Presenter:** LONGO, Francesco (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Gamma rays from Space

Contribution ID: 2

Type: **not specified**

# High Energy Gamma Ray Astrophysics. An historical perspective

*Monday, 30 June 2025 10:15 (30 minutes)*

**Presenter:** CARAVEO, Patrizia

**Session Classification:** Gamma rays from Space

Contribution ID: 3

Type: **not specified**

# Observation of the Gamma Ray Sky from Space

*Monday, 30 June 2025 10:45 (30 minutes)*

**Presenter:** CUTINI, Sara (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Gamma rays from Space

Contribution ID: 4

Type: **not specified**

## GRB prompt modeling

*Monday, 30 June 2025 11:45 (30 minutes)*

**Presenter:** BOSNJAK, Zeljka

**Session Classification:** GRB modeling

Contribution ID: 5

Type: **not specified**

## GRB afterglow modeling

*Monday, 30 June 2025 12:15 (30 minutes)*

**Presenter:** NAVA, Lara

**Session Classification:** GRB modeling

Contribution ID: 6

Type: **not specified**

## VHE emission from GRBs

*Monday, 30 June 2025 12:45 (30 minutes)*

**Presenter:** MICELI, Davide (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** GRB modeling

Contribution ID: 7

Type: **not specified**

## **Photospheric emission from GRB211211A altered by a strong radiation-mediated shock**

*Monday, 30 June 2025 15:00 (15 minutes)*

**Presenter:** WISTEMAR, Oscar

**Session Classification:** Contributed Talks: GRB 1st session

Contribution ID: 8

Type: **not specified**

## Measuring the expansion of GRB afterglows

*Monday, 30 June 2025 15:15 (15 minutes)*

**Presenter:** GIARRATANA, Stefano (University of Bologna (BO, Italy))

**Session Classification:** Contributed Talks: GRB 1st session

Contribution ID: 9

Type: **not specified**

## **Towards a joint time-resolved systematic analysis of GRBs**

*Monday, 30 June 2025 15:30 (15 minutes)*

**Presenter:** HOLZMANN AIRASCA, Aldana (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed Talks: GRB 1st session

Contribution ID: **10**

Type: **not specified**

## **Systematic time resolved analysis of gamma-ray bursts detected by Fermi-GBM**

*Monday, 30 June 2025 15:45 (15 minutes)*

**Presenter:** DEPALO, Davide (Istituto Nazionale di Fisica Nucleare - Sezione di Bari)

**Session Classification:** Contributed Talks: GRB 1st session

Contribution ID: **11**

Type: **not specified**

## Academic presentation

*Monday, 30 June 2025 16:00 (1 hour)*

**Presenter:** Dr VERCELLONE, Stefano (INAF - Osservatorio Astronomico di Brera)

**Session Classification:** Hands On Session - 1

Contribution ID: 13

Type: **not specified**

## How to prepare a research grant

*Monday, 30 June 2025 17:30 (1 hour)*

**Presenter:** HASSAN, Tarek

**Session Classification:** Hands On Session - 1

Contribution ID: 14

Type: **not specified**

# Observation of the Gamma Ray Sky from the ground –the IACT technique

*Tuesday, 1 July 2025 09:00 (30 minutes)*

**Presenter:** BERTI, Alessio (Max Planck Institute for Physics)

**Session Classification:** Gamma rays from the ground

Contribution ID: 15

Type: **not specified**

## **The CTAO: status and perspectives**

*Tuesday, 1 July 2025 09:30 (30 minutes)*

**Presenter:** DA VELA, Paolo

**Session Classification:** Gamma rays from the ground

Contribution ID: 16

Type: **not specified**

## **Ground-level particle detection for gamma-ray astronomy**

*Tuesday, 1 July 2025 10:00 (30 minutes)*

**Presenter:** HINTON, Jim (MPIK)

**Session Classification:** Gamma rays from the ground

Contribution ID: 17

Type: **not specified**

## **Multiwavelength modeling of Active Galactic Nuclei or: Camels in the sky**

*Tuesday, 1 July 2025 11:00 (30 minutes)*

**Presenter:** Dr MANGANARO, Marina

**Session Classification:** AGN modeling

Contribution ID: **18**

Type: **not specified**

## **Leptonic modeling of blazars**

*Tuesday, 1 July 2025 11:30 (30 minutes)*

**Presenter:** TAVECCHIO, Fabrizio (INAF-)AB)

**Session Classification:** AGN modeling

Contribution ID: **19**

Type: **not specified**

## Hadronic modeling of blazars

*Tuesday, 1 July 2025 12:00 (30 minutes)*

**Presenter:** CERRUTI, Matteo (Université Paris Cité)

**Session Classification:** AGN modeling

Contribution ID: 20

Type: **not specified**

## **Two-zone modelling of the very bright and variable FSRQ 3C 279**

*Tuesday, 1 July 2025 15:15 (15 minutes)*

**Presenter:** LUASHVILI, Anna

**Session Classification:** Contributed talks: AGN session

Contribution ID: 21

Type: **not specified**

## **High-Energy Neutrino Emission in NGC1068 driven by turbulent magnetic reconnection**

*Tuesday, 1 July 2025 15:30 (15 minutes)*

**Presenter:** PASSOS REIS, Luana

**Session Classification:** Contributed talks: AGN session

Contribution ID: 22

Type: **not specified**

## Gammapy analysis

*Tuesday, 1 July 2025 16:00 (1 hour)*

**Presenter:** MARTÍ-DEVESA, Guillem (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Hands On session - 2

Contribution ID: 23

Type: **not specified**

## How to crosscheck models and data

*Tuesday, 1 July 2025 17:30 (1 hour)*

**Presenter:** ARBERT ENGELS, Axel

**Session Classification:** Hands On session - 2

Contribution ID: 24

Type: **not specified**

## Cosmic ray recent observations

*Wednesday, 2 July 2025 09:00 (30 minutes)*

**Presenter:** VECCHI, Manuela

**Session Classification:** Multimessenger observations

Contribution ID: 25

Type: **not specified**

# Observations of Gravitational Waves

*Wednesday, 2 July 2025 09:30 (30 minutes)*

**Presenter:** RAZZANO, Massimiliano (University of Pisa and INFN-Pisa)

**Session Classification:** Multimessenger observations

Contribution ID: 26

Type: **not specified**

## Observation of high energy neutrinos

*Wednesday, 2 July 2025 10:00 (30 minutes)*

**Presenter:** MARSELLA, Giovanni (Università degli Studi di Palermo and Istituto Nazionale di Fisica Nucleare sez. Catania)

**Session Classification:** Multimessenger observations

Contribution ID: 27

Type: **not specified**

## UHECR emission models

*Wednesday, 2 July 2025 11:00 (30 minutes)*

**Presenter:** BONCIOLI, Denise (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Multimessenger modeling

Contribution ID: 28

Type: **not specified**

## Modeling of Gravitational Wave sources

*Wednesday, 2 July 2025 11:30 (30 minutes)*

**Presenter:** PATRICELLI, Barbara (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Multimessenger modeling

Contribution ID: 29

Type: **not specified**

## Multimessenger searches for Dark Matter

*Wednesday, 2 July 2025 12:00 (30 minutes)*

**Presenter:** MORSELLI, Aldo (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Multimessenger modeling

Contribution ID: 30

Type: **not specified**

## **Insight on GRB physics from a novel data driven method for systematic analysis of X-ray light-curves**

*Wednesday, 2 July 2025 15:00 (15 minutes)*

**Presenter:** VIGLIANO, Alessandro Armando (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed talks: GRB 2nd session

Contribution ID: **31**

Type: **not specified**

## **FRBs and GRBs**

*Wednesday, 2 July 2025 15:15 (15 minutes)*

**Presenter:** PARRINELLO, Kaitlyn Lucia (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed talks: GRB 2nd session

Contribution ID: 32

Type: **not specified**

## **The role of internal shocks in prompt gamma-ray burst emission: implications for synchrotron emission and spectral breaks**

*Wednesday, 2 July 2025 15:30 (15 minutes)*

**Presenter:** SOARES, Gustavo

**Session Classification:** Contributed talks: GRB 2nd session

Contribution ID: 33

Type: **not specified**

## **Estimation of joint detection probabilities of Gamma-Ray Burst and Gravitational Waves produced by NSBH binary mergers**

*Wednesday, 2 July 2025 15:45 (15 minutes)*

**Presenter:** Mr MATCOVICH, Tobia (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed talks: GRB 2nd session

Contribution ID: 34

Type: **not specified**

## **Science and Society: why communicate scientific research**

*Wednesday, 2 July 2025 16:00 (1 hour)*

**Presenter:** SPIGA, Rossella

**Session Classification:** Hands On session - 3

Contribution ID: 35

Type: **not specified**

## Astroparticle Science Communication

*Wednesday, 2 July 2025 17:30 (1 hour)*

**Presenter:** ARAMO, Carla (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Hands On session - 3

Contribution ID: 36

Type: **not specified**

## First results from the SVOM mission

*Thursday, 3 July 2025 09:00 (30 minutes)*

**Presenter:** PIRON, Frédéric (CNRS/IN2P3/LUPM)

**Session Classification:** Multiwavelength observations

Contribution ID: 37

Type: **not specified**

## **X-ray Polarimetry with IXPE: from detector design to scientific discoveries**

*Thursday, 3 July 2025 09:30 (30 minutes)*

**Presenter:** BONINO, Raffaella (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Multiwavelength observations

Contribution ID: 38

Type: **not specified**

## The ASTRI mini-array gamma ray experiment

*Thursday, 3 July 2025 10:00 (30 minutes)*

**Presenter:** PARESCHI, Giovanni (INAF - Osservatorio Astronomico di Brera)

**Session Classification:** Multiwavelength observations

Contribution ID: 39

Type: **not specified**

## The highest E neutrino from km3Net

*Thursday, 3 July 2025 11:00 (30 minutes)*

**Presenter:** CELLI, Silvia (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Multimessenger observations and modeling

Contribution ID: 40

Type: **not specified**

## Galactic sources modeling

*Thursday, 3 July 2025 11:30 (30 minutes)*

**Presenter:** MORLINO, Giovanni (INAF/Oss. Astrofisico di Arcetri)

**Session Classification:** Multimessenger observations and modeling

Contribution ID: 41

Type: **not specified**

## The newAstrogam mission

*Thursday, 3 July 2025 12:00 (30 minutes)*

**Presenter:** MORSELLI, Aldo (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Multimessenger observations and modeling

Contribution ID: 42

Type: **not specified**

## **The Antarctic Demonstrator for the Advanced Particle-astrophysics Telescope (ADAPT), overview and project status**

*Thursday, 3 July 2025 15:00 (15 minutes)*

**Presenter:** LOIZZO, Pierpaolo (University of Trento/Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed talks: Technical talks

Contribution ID: 43

Type: **not specified**

## **Anomaly Detection with Machine Learning in Time Series: Unveiling Lost Transients**

*Thursday, 3 July 2025 15:15 (15 minutes)*

**Presenter:** ADELFIGIO, Andrea (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed talks: Technical talks

Contribution ID: 44

Type: **not specified**

## **Eyes on High-Energy Emissions: Ground- and Space-Based Perspectives in Gamma-Ray Research**

*Thursday, 3 July 2025 15:30 (15 minutes)*

**Presenter:** ZACCARO, Antonio

**Session Classification:** Contributed talks: Technical talks

Contribution ID: 45

Type: **not specified**

## CTAO Divergent pointing

*Thursday, 3 July 2025 15:45 (15 minutes)*

**Presenters:** AMBROSINO, Daniele (Istituto Nazionale di Fisica Nucleare); JAHANVI, Jahanvi (University of Udine and INFN-Trieste)

**Session Classification:** Contributed talks: Technical talks

Contribution ID: 46

Type: **not specified**

## Gammapy

*Thursday, 3 July 2025 16:00 (1 hour)*

**Presenter:** MARTÍ-DEVESA, Guillem (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Hands On session - 4

Contribution ID: 47

Type: **not specified**

## Gammapy

*Thursday, 3 July 2025 17:30 (1 hour)*

**Presenter:** MARTÍ-DEVESA, Guillem (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Hands On session - 4

Contribution ID: 48

Type: **not specified**

## **CTAO LST-1 observations of magnetar SGR 1935+2154: deep limits on sub-second bursts and persistent TeV emission**

*Friday, 4 July 2025 09:00 (15 minutes)*

**Presenter:** PANEBIANCO, Gabriele

**Session Classification:** Contributed talks: Galactic session

Contribution ID: 49

Type: **not specified**

## **Solar-system gamma-ray sources with Fermi-LAT**

*Friday, 4 July 2025 09:15 (15 minutes)*

**Presenter:** LIGUORI, Antonio (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Contributed talks: Galactic session

Contribution ID: 50

Type: **not specified**

## **Cosmic Rays' Energy Dependent Escape Time (CREDIT)**

*Friday, 4 July 2025 09:30 (15 minutes)*

**Presenter:** LOO, Chun Kai

**Session Classification:** Contributed talks: Galactic session

Contribution ID: 51

Type: **not specified**

## **VHE binary systems with MAGIC+LST and brief introduction to SII**

*Friday, 4 July 2025 09:45 (15 minutes)*

**Presenter:** FRIAS, Fernando

**Session Classification:** Contributed talks: Galactic session

Contribution ID: 52

Type: **not specified**

## **Observational Lessons learned from Fermi.**

*Friday, 4 July 2025 10:00 (30 minutes)*

**Presenter:** BISSALDI, Elisabetta (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Closing Session

Contribution ID: 55

Type: **not specified**

## TeV transient sources with H.E.S.S

*Tuesday, 1 July 2025 15:45 (15 minutes)*

**Presenter:** PICHARD, Pierre

**Session Classification:** Contributed talks: AGN session

Contribution ID: 56

Type: **not specified**

## Concluding remarks

*Friday, 4 July 2025 10:30 (15 minutes)*

**Presenter:** LONGO, Francesco (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Closing Session