

NMDB Meeting 2025

Session 1: Cosmic Rays in the Heliosphere

Session 2: Intense Events of 2024

Session 3: Cosmic Rays and
Space Weather effects

Session 4: Cosmic Ray Detection
Instrumentation

Session 5: Databases and Catalogues

Scientific Committee

Abunina, Maria (Russia)
Blanco, Juan Jose (Spain)
Buetikofer, Rolf (Switzerland)
Gerontidou, Maria (Greece)
Klein, Karl - Ludwig (France)
Kryakunova, Olga (Kazakhstan)
Mavromichalaki, Helen (Greece)
Mishev, Alexander (Finland)
Steigies, Christian T. (Germany)

Local Organizing Committee

Mavromichalaki, Helen (Chair)
Gerontidou, Maria
Papailiou, Maria - Christina
Lingri, Dimitra
Stassinakis, Argyris



Athens Cosmic Ray Group

Helen Mavromichalaki, Prof. Em.
Maria Gerontidou, Dr.
Pavlos Paschalis, Dr.
Maria - Christina Papailiou, Dr.
Argyris Stassinakis, Dr.
Maria Livada, Dr.
Dimitra Lingri, Dr.
Anastasia Tezari, Dr.
Penny Makrantonis, Dr.

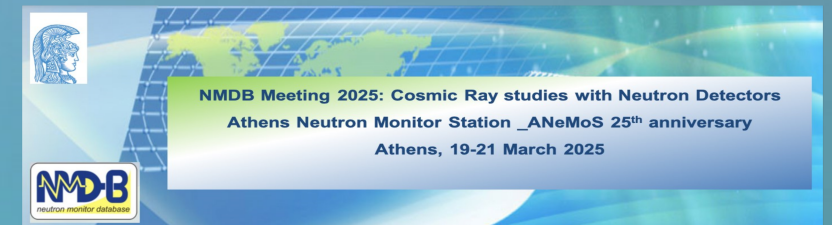
Athens Cosmic Ray Station

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URL: cosray.phys.uoa.gr
swe.ssa.esa.int/web/guest/anemos-federated
swe.ssa.esa.int/web/guest/dyastima-federated
swe.ssa.esa.int/web/guest/ap_Prediction-federated

Website: <https://conferences.uoa.gr/e/nmdb2025/>



NMDB Meeting 2025

Cosmic Ray studies with
Neutron Detectors

Athens Neutron Monitor Station

25th Anniversary



Athens, 19 – 21 March 2025

Seminar Room, Department of Physics,
Panepistimioupolis, Zografos

Athens Neutron Monitor Station — A.Ne.Mo.S.

The Athens Neutron Monitor Station (A.Ne.Mo.S.) of the Department of Physics of the National & Kapodistrian University of Athens (NKUA) was implemented in November 2000.



A.Ne.Mo.S. is housed in a specially constructed room at the roof of the Department of Physics at the campus of the NKUA. It consists of six BF3 gas proportional counters with the enriched isotope B type BP28 Chalk.

A.Ne.Mo.S. (Super 6NM-64) stands out amongst the neutron monitors of the worldwide network as it was the 4th station to be able to provide real-time data on the internet and also due to its special location (the only station in the Balkans and the eastern Mediterranean Sea).

A.Ne.Mo.S. (altitude 260 m asl, geographical coordinates 37°58' N, 23°47' E and cut-off rigidity 8.53GV) is operated by the Athens Cosmic Ray Group and has proven its valuable contribution to the scientific research and educational procedure during the recent decades.

Activities of A.Ne.Mo.S.

A. Education

Undergraduate and postgraduate courses concerning Cosmic Rays are available in the curriculum of the Department of Physics. Theoretical analysis, developing research and advanced applications are presented to the students of the Department during visits to the station and laboratory exercises. A.Ne.Mo.S., also, hosts visits from schools and the public. A number of theses at undergraduate level have been carried out, while 20 theses at postgraduate level and over 15 doctoral theses have been completed.

B. Research

A.Ne.Mo.S. has played a valuable and significant role in Space Weather Research by participating in various national, european and international research programs. Some of the most recent are the European FP7 program '**High-Resolution Neutron Monitor Database — NMDB** (<http://www.nmdb.eu>) and the **ESA Space Safety Program Space Weather Service Network** (<https://swe.ssa.esa.int/space-weather-and-space-safety-programme>).

C. Publications

Over 160 papers in international peer reviewed journals have been published since 1980. Moreover, the Athens Cosmic Ray Group has been present in international and european conferences for over 4 decades and has over 300 publications in conference proceedings.

D. Collaborations

Over the years, the Athens Cosmic Ray Group with A.Ne.Mo.S. have successfully collaborated with scientific groups from both domestic and international Universities and Institutes.

ESA Space Safety Program

Space Weather Service Network

A. Space Radiation Expert Service Centre (R-ESC)

1. GLE Alert ++ system

This system is fully integrated as a federated product on the ESA SWE Portal. Based on ground-based neutron monitor observations, GLE Alert++ issues alerts when a GLE event is starting to be recorded.

2. Multi Station Neutron Monitor Data

A web interface provides data from multiple neutron monitor stations.

3. DYnamic Atmospheric Shower Tracking Interactive Model Application (DYASTIMA)

DYASTIMA is a standalone application for the simulation of the showers produced in the atmosphere of a planet due to cosmic rays, based on the Geant4 simulation toolkit.

B. Geomagnetic Conditions Expert Service Centre (G-ESC)

1. ap Prediction tool

The ap Prediction tool is a federated product on the ESA SWE Portal. Forecasting the ap index is of great importance since it correlates to the geomagnetic storms and the breadth of the aurora oval. The aim of this software is to forecast the values of the ap geomagnetic index for the next 3, 6, 9, 12, 24, 48 and 72hrs with a 3hrs prediction interval.