PHD POSITION

Atmospheric Electric Fields and Cosmic-Ray-Induced Extensive Air Showers

POSITION OVERVIEW

Institution:	Cosmic Ray Division (CRD) of the Alikhanyan National Laboratory (YerPhI)
Location:	Aragats Space Environmental Center (ASEC), Yerevan, Armenia
Duration:	Three years, full-time
Research Focus:	Propagation of Extensive air Showers in the thunderous atmosphere. Recovering of energy of galactic cosmic rays by large surface detectors

The Cosmic Ray Division (CRD) invites applications for a dedicated PhD position. The successful candidate will join an international research effort to study high-energy atmospheric phenomena, using the unique high-altitude facilities at Mt. Aragats. The PhD project is part of the 15 GRAIL (Gamma Radiation from the Atmosphere for Investigation and Learning) PhD projects in the European doctoral network. The position will start on September 1st. Payment is in accordance with EU rules on Doctoral Networks. More information about GRAIL can be found at grail.physik.tu-dortmund.de

KEY RESPONSIBILITIES

- Incorporate measured atmospheric electric-field profiles into air-shower simulations.
- Simulate field-modified shower development and particle transport with state-of-the-art Monte Carlo tools.
- Analyze ASEC/SEVAN measurements to quantify EAS variations during thunderstorms.

strengths.

- Disentangle atmospheric electric-field effects from magnetospheric and heliospheric influences.
- Validate simulations against experimental observations and refine diagnostic parameters for field-modified EAS.
- Contribute to maintaining and improving the measurement chain (data quality control and detector performance).
- Undertake shifts at the high-altitude Aragats research station.
- Publish research findings in peer-reviewed journals and present at international conferences.

WHAT WE OFFER

- World-Class Environment: Research at a leading high-altitude cosmic-ray and atmospheric physics observatory.
- Unique Infrastructure: Direct access to combined particle and atmospheric electric-field measurements at ASEC.
- Global Networking: Opportunities for participation in international collaborations, conferences, and training schools.
- Expert Mentorship: Comprehensive supervision by experienced researchers in cosmic-ray and atmospheric physics.

CANDIDATE PROFILE

The ideal candidate will possess the following qualifications:

- Education: Master's degree in physics, astrophysics, atmospheric science, or a closely related discipline.
- Scientific Background: Knowledge of cosmic-ray physics, extensive air showers, or atmospheric electricity.
- Technical Skills: Experience with scientific programming and data analysis (Python/C++/Fortran) is an advantage.
- Motivation: Strong motivation for interdisciplinary research combining simulations and high-altitude observations.

EQUAL OPPORTUNITIES

The institution promotes equal opportunities for all candidates. Applications from women are particularly encouraged to foster diversity in the scientific community. The selected candidate will be officially enrolled in the PhD program of the host institution.

Alikhanyan National Laboratory (YerPhI) • Aragats Space Environmental Center (ASEC). Prof. Ashot Chilingarian
Chili@aragats.am Deadline is May 24th, 2026, 11:59 p.m.