



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 Marie Curie doctoral network. The position will start on September 1st or according to negotiation. Payment is in accordance with EU rules on Doctoral Networks. Please note that candidates for this position are subject to the Horizon Europe mobility rule. A candidate must not have resided in Armenia for more than 12 months in the 3 years immediately prior to the date of recruitment (and not have carried out their main activity (work, studies, etc.) in that country). More information can be found at http://crd.yerphi.am/PhD_POSITIONS

KEY RESPONSIBILITIES

- 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.
- Study modifications of electron, positron, and muon components of EAS under different field polarities and 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, and contribute to data acquisition and data management.
- 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 candidate will possess the following qualifications:

- Education: Master's degree in physics, astrophysics, atmospheric science, or a closely related discipline.
- Scientific Background: Basic knowledge of cosmic-ray physics, extensive air showers, and atmospheric electricity.
- Technical Skills: Scientific programming and experience in data analysis methods are strong requirements.
- Motivation: Strong motivation for interdisciplinary research combining simulations and high-altitude observations.

RESEARCH OPPORTUNITIES

The selected candidate will be officially enrolled in the host institution's PhD program. The successful candidates will be involved in the ASEC and SEVAN collaborations, world-leading groups in high-energy atmospheric and solar physics.

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