# INTERNSHIP OFFER
# DE-2026-2079-3

Karlsruhe, Germany, Germany

ON-SITE

## INTERNSHIP HOST

Name of Company
Karlsruhe Institute of Technology Karlsruhe School of Elementary and Astoparticle Physics (KSETA)

Website
www.kseta.kit.edu

Address of Company
Karlsruhe
Germany

Number of Employees
9000

Business or Product
Higher Education and Research

## STUDENT REQUIRED

General Discipline
Physics and Physical Sciences

Field of Study
Astrophysics;Experimental Physics/ Applied Physics

Completed Years of Study
3

Language Required
English  Excellent (C1, C2)

Required Qualifications and Skills
Teamwork | Software Development | Scientific Computing | Physics | Creativity
You have experience in programming.

Student Status Requirements
Required during the whole period of internship

Other Requirements/Information
Bachelor's degree in physics, enrolment in a Master's programme.

## INTERNSHIP OFFER

8 - 12 weeks

992 EUR per Month

500 EUR per Month

Latest Possible Start Date
01-Jun-2026

Within Months
May-2026 - Aug-2026

Company Closed WIthin
-

Deductions Expected
variable

Payment Method
Bank Transfer

Arranged by
IAESTE

Estimated Cost of Living including Lodging
992 EUR / Month

Working Environment: Research and development

Working Hours / Week: 40.0

Observing the high-energy Cosmic Rays with IceCube Radio Antennas

IceCube is a one of its kind observatories located at the South Pole. It is primarily used for the detection of neutrinos of very high energies. IceTop, which is the surface component of IceCube is used for the detection of extensive air-showers generated by high-energy cosmic rays. The IceTop array consists of ice-Cherenkov tanks which detect the secondary particles of the air showers. KIT as member of the international IceCube collaboration has enhanced this surface instrumentation by the installation of scintillation detectors as well as with radio antennas, which signals from air-showers allow to better reconstruct the characteristics (like energy, direction, and type) of the primary cosmic-ray.

The student will be involved in the reconstruction of cosmic ray events detected by ice-Cherenkov tanks, scintillators and radio antennas of IceCube. The focus will primarily remain on the optimization of the reconstruction based on the radio antenna signal. Simulations of such events detected by IceCube will be used for this and tested with real data. Basic programming skills in python are required. As a whole, the student will be provided with the opportunity to learn about the highest energy particles produced by our Milky Way.

## ADDITIONAL INFORMATION

see additional documents

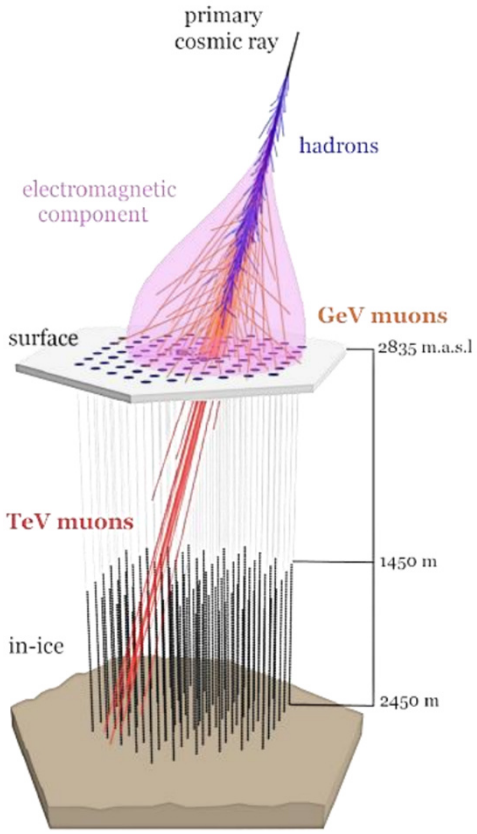
Deadline for Nomination - 25-Jan-2026

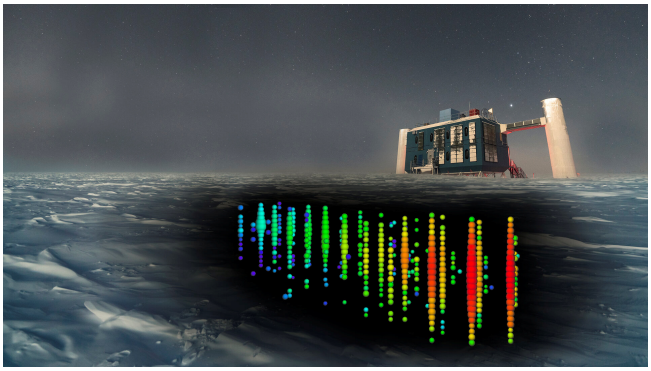
Karlsruhe Institute of Technology

2026 - Internship Proposal
Institute for Astroparticle Physics (IAP)

# Observing the high-energy Cosmic Rays with IceCube Surface Detectors

IceCube is a one of its kind observatories located at the South Pole. It is primarily used for the detection of neutrinos of very high energies. IceTop, which is the surface component of IceCube is used for the detection of extensive air-showers generated by high-energy cosmic rays. The IceTop array consists of ice-Cherenkov tanks which detect the secondary particles of the air showers. KIT as member of the international IceCube collaboration has enhanced this surface instrumentation by the installation of scintillation detectors as well as with radio antennas, in order to improve the measurement of the air-showers allow and to better reconstruct the characteristics (like energy, direction, and type) of the primary cosmic-ray.




The student will be involved in the reconstruction of cosmic ray events detected by ice-Cherenkov tanks, scintillators and radio antennas of IceCube. The focus will primarily remain on the optimization of the reconstruction. Big-Data Monte-Carlo simulations of events detected by IceCube will be used and confronted with real data. Basic programming skills in python are required. As a whole, the student will be provided with the opportunity to learn about the highest energy particles produced by our Milky Way.

Contact:
andreas.haungs@kit.edu
frederik.schmitt@kit.edu

ICECUBE NEUTRINO OBSERVATORY

Web:
www.iap.kit.edu
www.icecube.wisc.edu