

Ten years of the Outreach Project

INTERNATIONAL COSMIC DAY

DPG Frühjahrstagung

Nora Feigl, Carolin Schwerdt and Heike Prokoph for the Netzwerk Teilchenwelt-Collaboration DESY Zeuthen
Speaker: Nora Feigl
Heidelberg (virtual), March 2022

HELMHOLTZ



Goals of this Talk

Presenting the International Cosmic Day

I want to give you an idea...

- what the International Cosmic Day (ICD) is
- how to get involved

Ideas and Insights into...

- the possibilities and tasks of local organizers and participants
- the organizers perspective
- development and future plans



Discover Cosmic Rays

INTERNATIONAL COSMIC DAY

10 YEARS

November 10 | 2021

Cosmic particles, these unnoticed particles that surround us all the time, are the focus of this day. Students, teachers and scientists get together to talk and learn about Cosmic Rays and answer questions like:

What are cosmic particles?
Where do they come from?
How can they be measured?
And what can we learn from them?

If you want to know more about the secrets they bring with and to be part of this collaboration, get here more information:

<https://icd.desy.de>
<https://www.facebook.com/InternationalCosmicDay>

Image Credit: DESY, Science Communication Lab

Logos: ICD, TEILCHENWELT, DESY, Fermilab, QuarkNet

What is the International Cosmic Day

The event

- students, teachers and scientists come together for one day to talk and learn about cosmic particles
- exists since 2012, takes place every year in early November
- participants from more than 60 institutions in 17 countries (2021)

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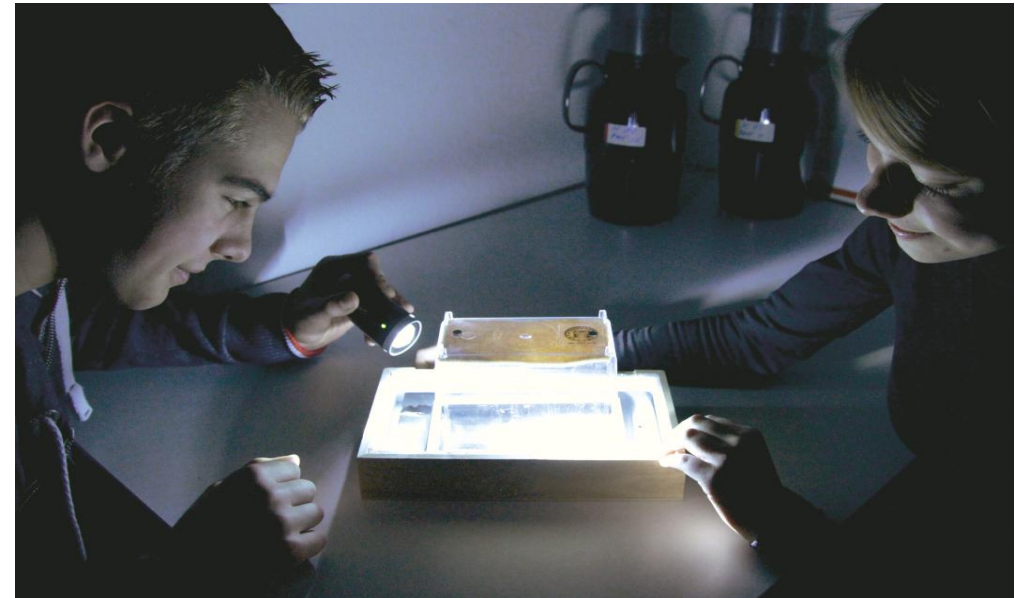
The idea of the ICD:

- students become researchers in astroparticle physics for one day
- learn about cosmic particles and the work of a scientist
- measure cosmic particles, compare methods and results
- exchange with other students, learn how international collaborations work

How to get involved

And what to do as a local organizer

- teacher and scientist(s) organize **local event** for students
- variety of **cosmic particle projects** possible: experiments, lectures, Cosmic@Web data analysis, Masterclasses, visit to a science institute, tasks to do at home...
- location: at school, university, research institute or virtually
- **video call**: short prepared presentation about ICD project, exchange about measurement results
- report on project in **booklet** (ca. one page)



Work like a scientist

On the International Cosmic Day

- introduction to astroparticle physics
- raise question concerning cosmic particles
- experiment to answer question
- analyze data of experiment → draw conclusions, answer question
- discuss with other researchers
- publish results in booklet



Project Examples

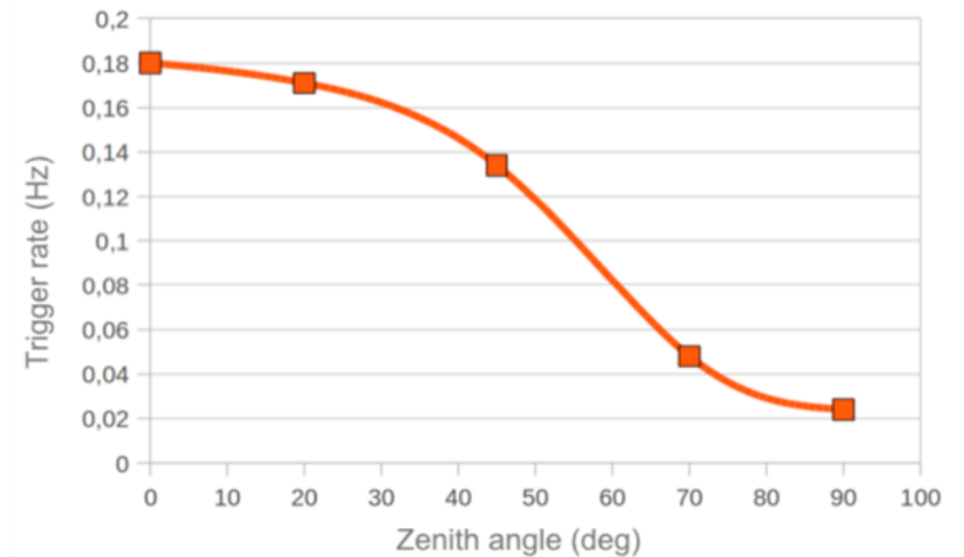
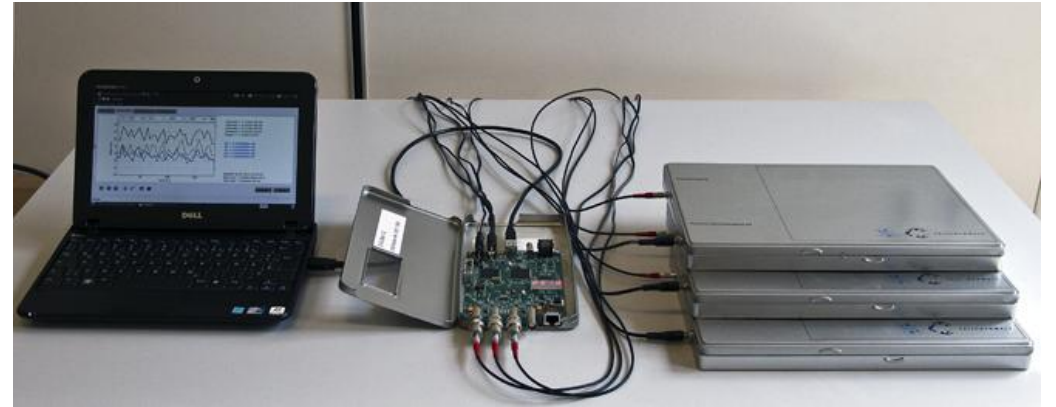
Exploring cosmic particles

Zenith Angle Distribution of Air Shower Particles:

- CosMO (Cosmic Muon Observer, picture): measurement with scintillation counters
- measure muon rate produced in extended air showers as function of zenith angle

→ most cosmic rays reach us from above

Project from Réunion: measured muon rate according to latitude by bringing a muon detector on a research ship



Cosmic@Web

Analysis of Data from Cosmic Particles

- online learning platform <http://cosmicatweb.desy.de>
- evaluation of data from experiments that measure cosmic particles 24/7
- data to study: lifetime of muons, muon rate depending on weather conditions...

provides:

- introduction pages, 'How to?' and glossary
- experiment and data descriptions
- selection of interesting problems to solve
- plotting tool

Diagram Creation

Setting of detail level

Standard

1. Data Array

Choose Data Set

Experiment
CosMO-Muehle

Data Set
2017_M - rate per angle

Diagram Type
xy-Diagram

Choose Variables

x-Variable
time [s]

y-Variable
mu_rate [1/h]

z-Variable
optional

Diagram Option

Title
International Cosmic Day

Legend

Position
automatically

Organizing the International Cosmic Day

ICD team perspective

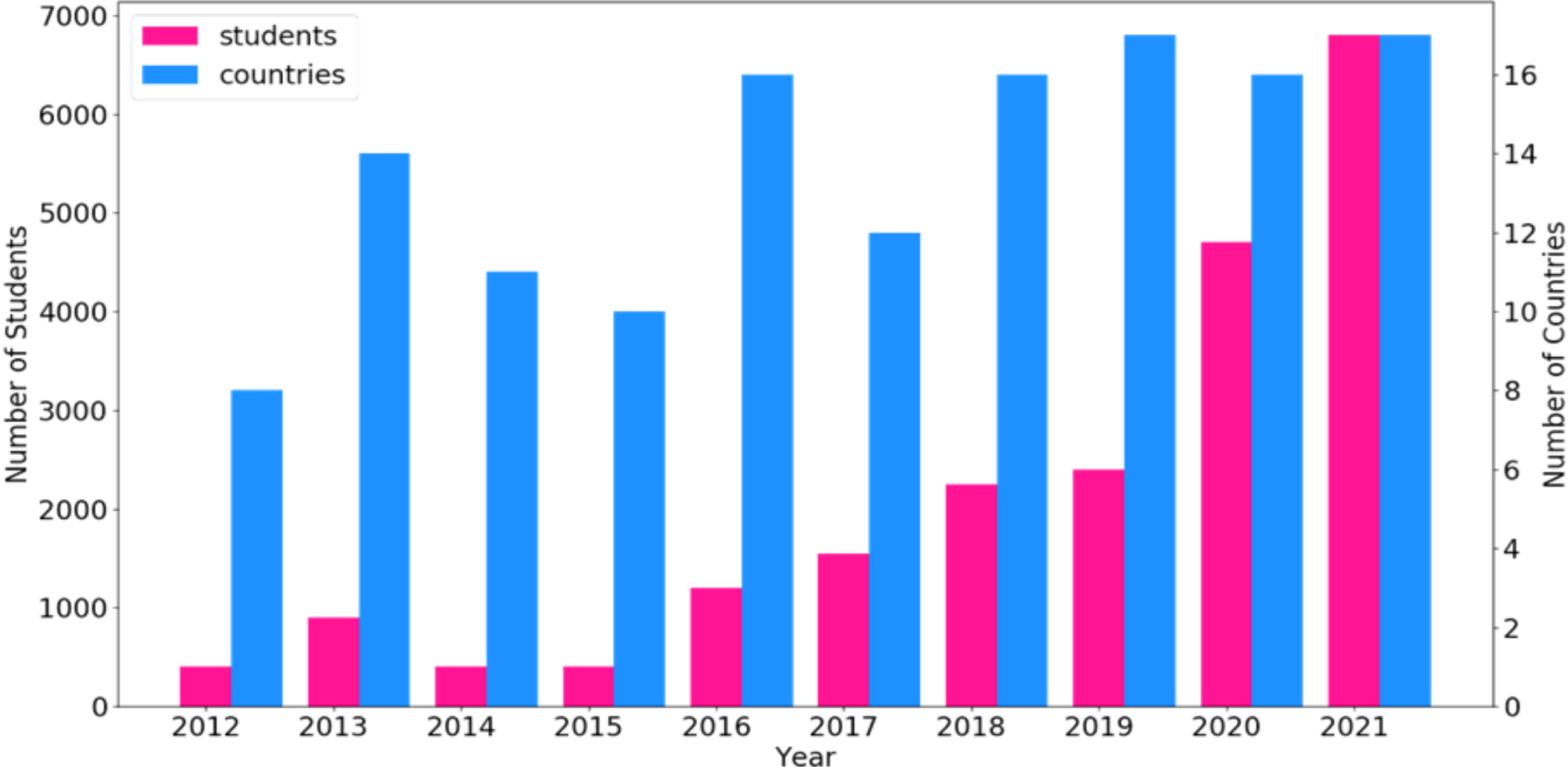
- offer: a platform, some material and a network, not a day-filling program
- manage registrations and send information around
- provide announcement posters, certificates of participation, online material
- plan and moderate about 10 video meetings and a welcome call
- compile booklet after the event
- drawing and selfie contest, Kahoot quiz
- **Communication tools and used platforms:** video meeting platform, registration platform, survey tool, website, social media



Winner of the Drawing Contest
2021: Farbod from Iran

Development

The ICD: a growing event



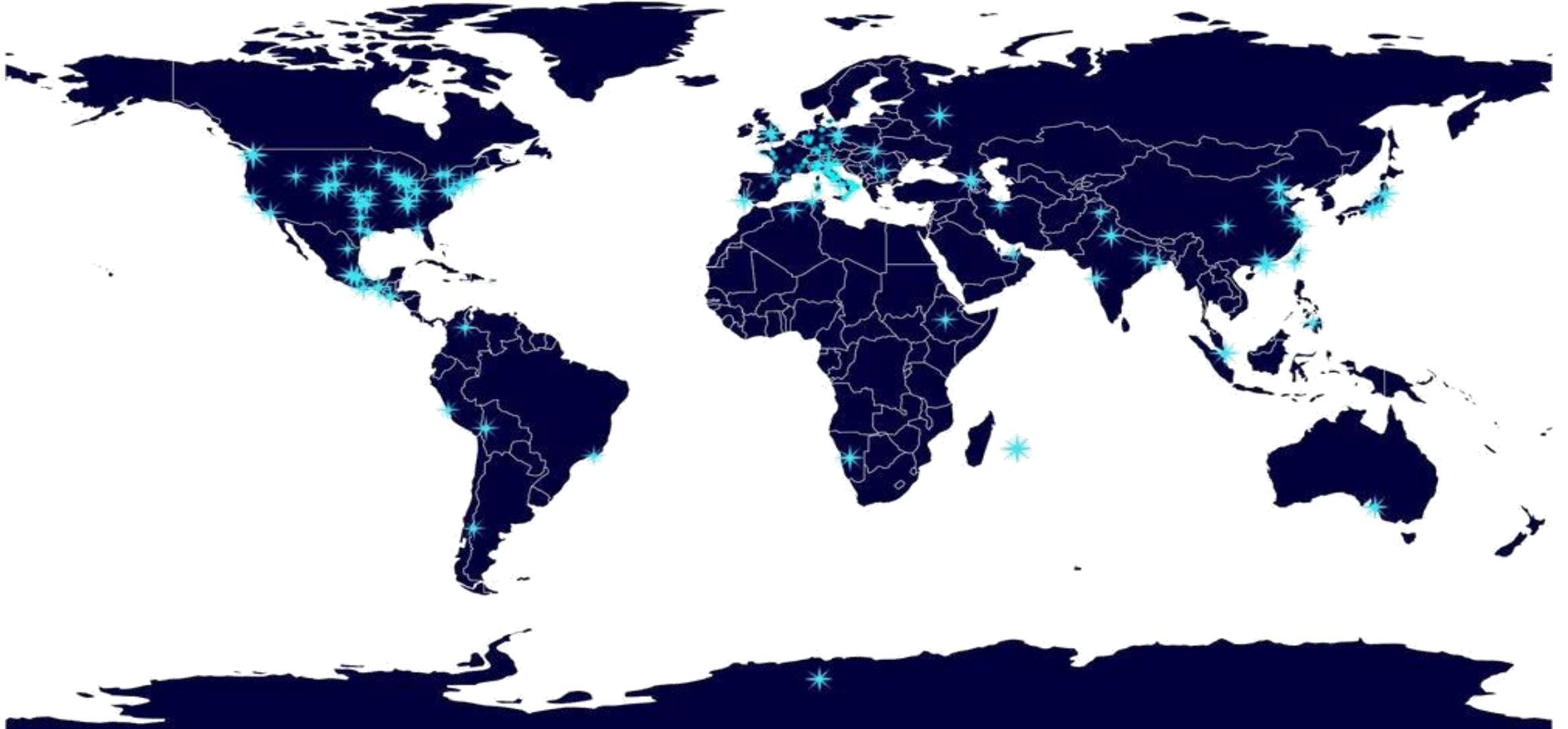
Participating Groups Worldwide

2021



Participating Groups Worldwide

2012 - 2021



Development

History and future plans

- **the beginning:** same project for all groups (zenith angle measurement), communication via text chats
- **today:** variety of possibilities to participate, exchange via video meetings and social media
- **challenges:**
 - COVID-19: more (online) possibilities to participate
 - offer for single-student registration was not successful
 - countrywide networks have big influence on participation



Winner of the Selfie Contest 2021: Liceo Galileo Ferraris from Italy

Summary

Take-home message and contact

- students become researchers in astroparticle physics on ICD
- learn about cosmic particles, experience science as a connecting element around the globe
- ICD team responsible for connection of the international groups; local organizers responsible for local program

- **Website:** <https://icd.desy.de/>
- **Contact:** icd@desy.de
- **Facebook and Instagram:**
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If you are interested: please contact us!

