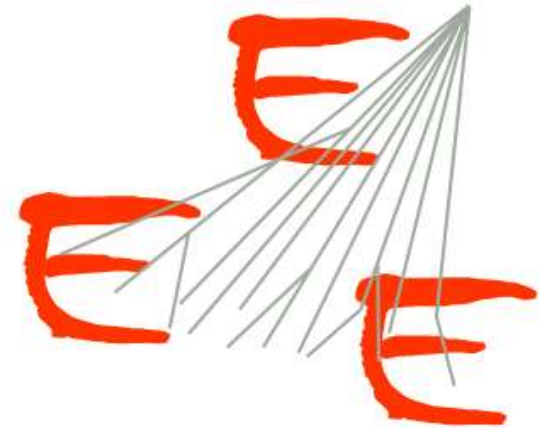


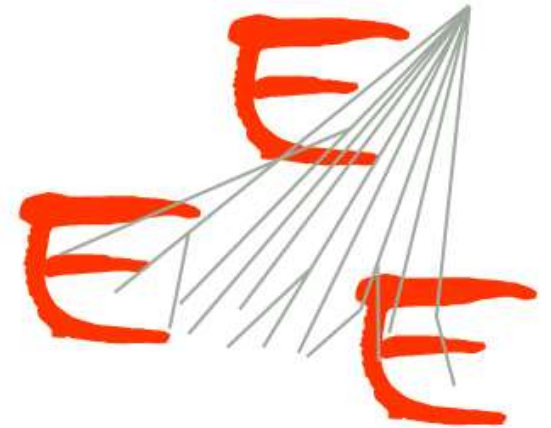
EEE status and plans



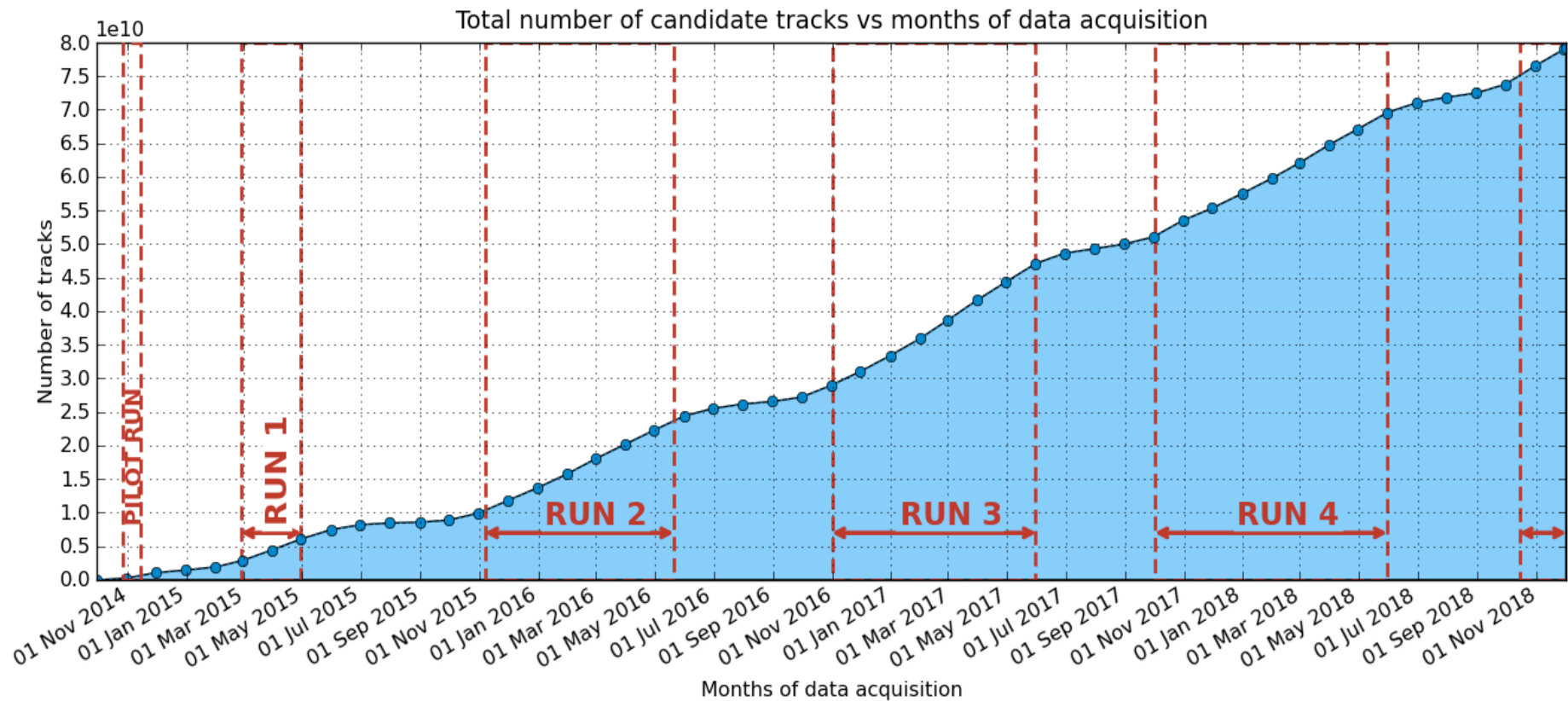
What we will discuss today

- Data taking
- Upgrade
- One selected physics topic
- Plans for the future

Data taking



Total number of tracks



The network of the EEE telescopes
acquired ~ **80 billions** muons in 4 years

Days of data taking (Runs)

Days of Data Taking

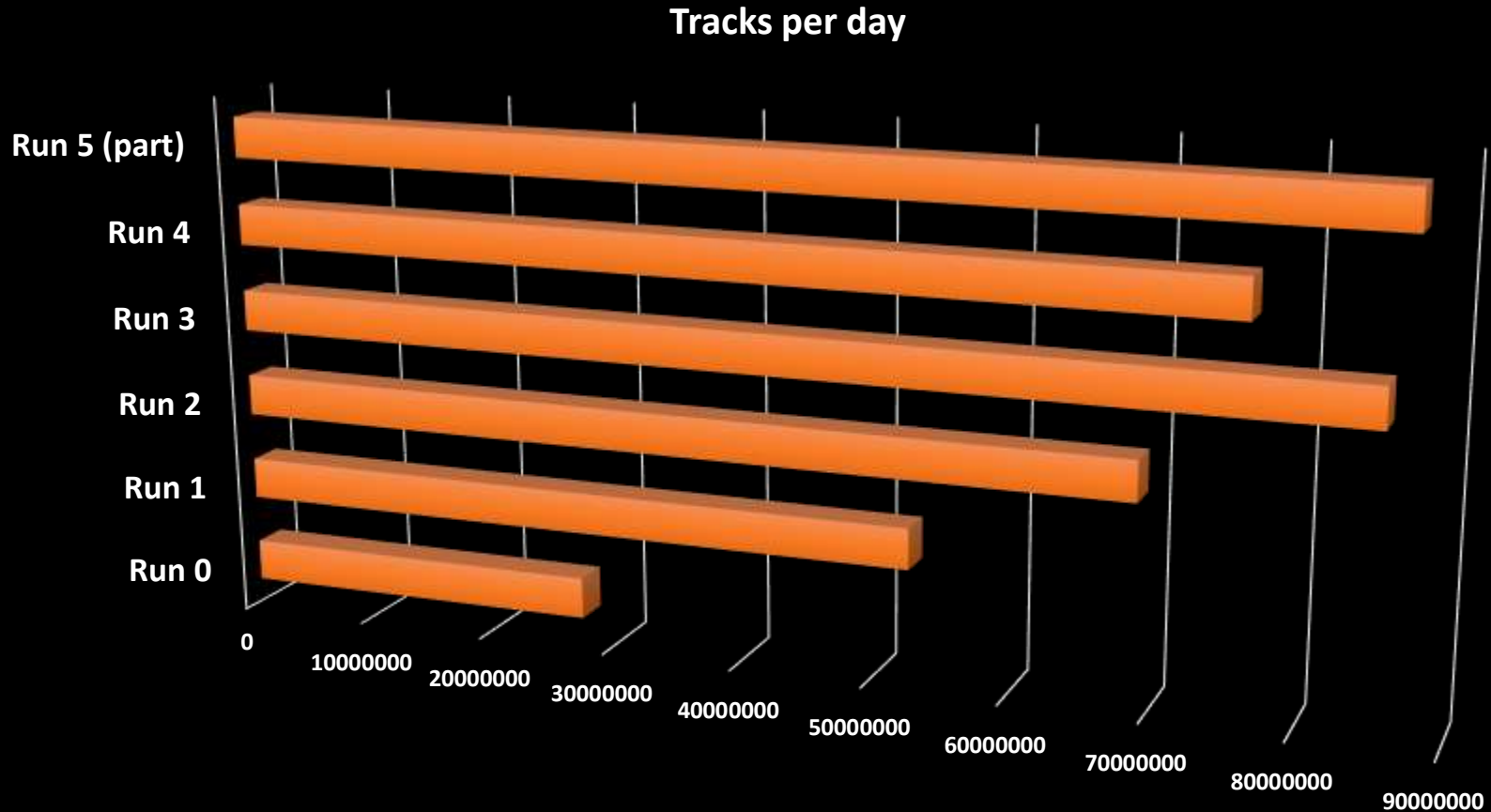
Run[2,5] ~ 200 days of data taking each



Total number of days of data taking during Runs at the end of RUN 5: 741

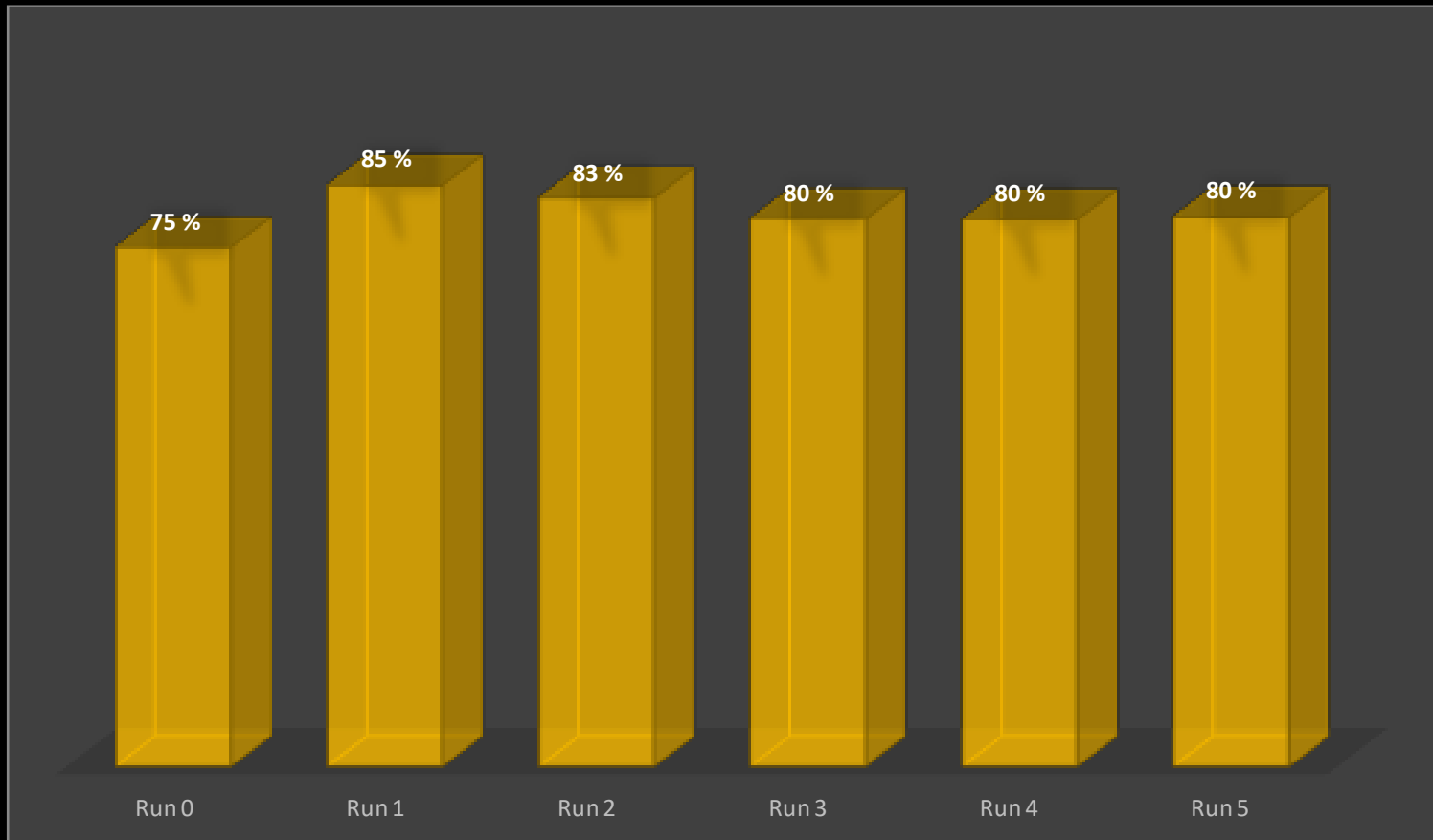
**But remember: we are taking data every day, even when the Run is finished !!
PLEASE KEEP YOUR TELESCOPE ALWAYS UP AND RUNNING !!**

of reconstructed tracks/day



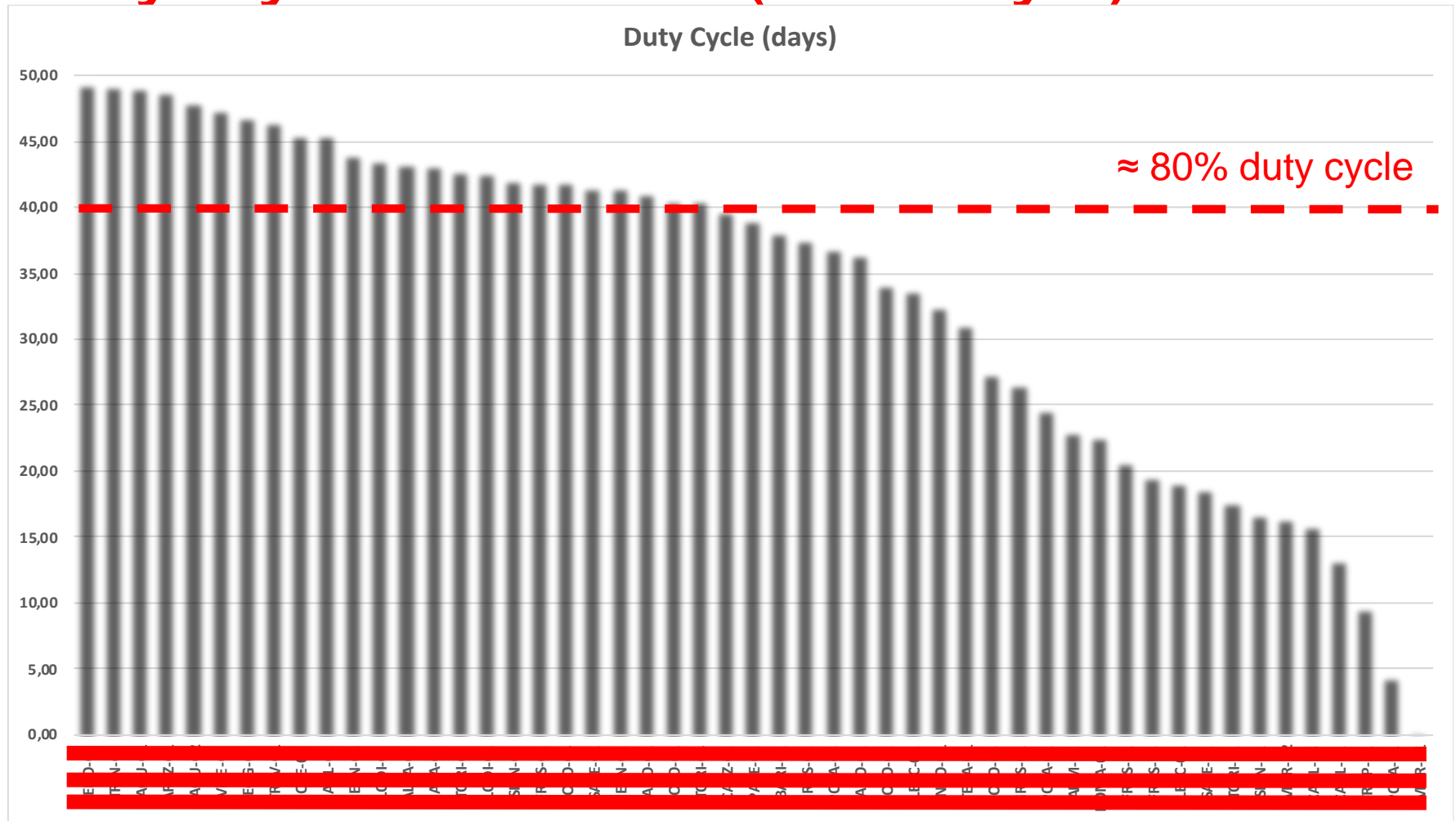
RUN 5: the EEE telescope network detects more than **87 million** muons per day

Telescopes performance



Performance = candidate_tracks / triggers

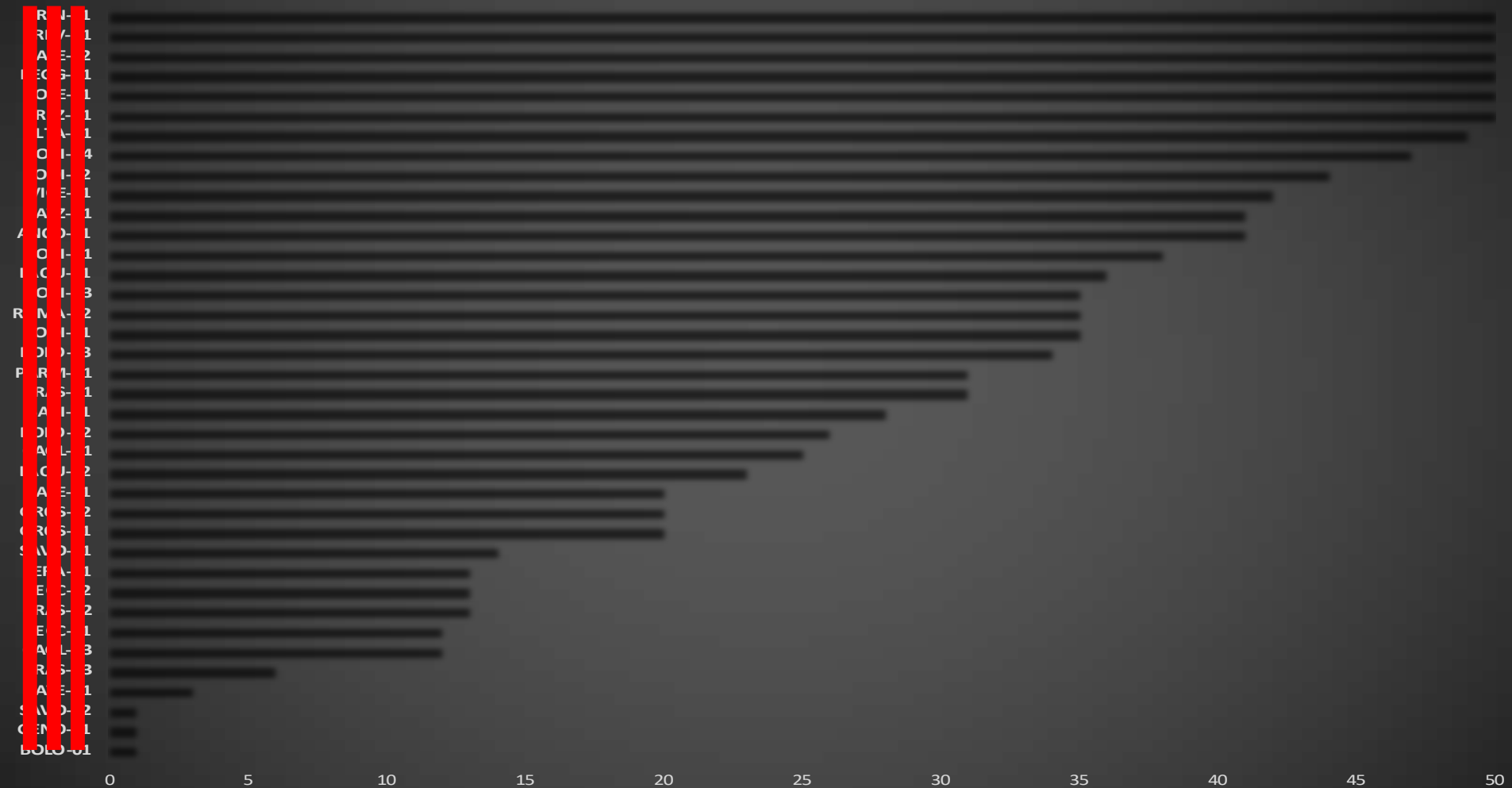
Duty cycle Run 5 (49 days)



Duty cycle = # of days one telescope sends good data

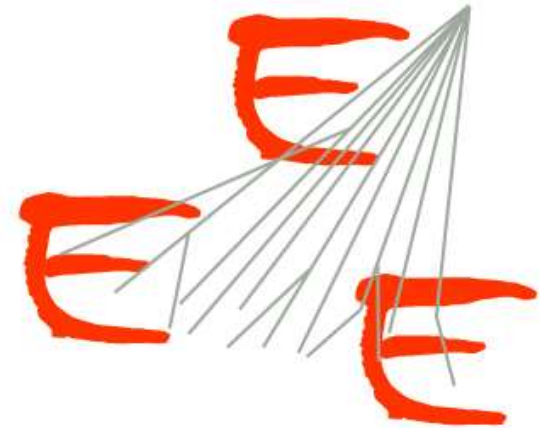
E-log compilation

Number of Elog Entries for RUN 5 (50 days)



Each school should compile the e-log each day!

Upgrade



Chamber construction campaign 17/18

- 8 telescopes

LAMP-01, GENO-01, SIEN-02, CARI-01, TORI-05,
LODI-03, CAGL-04, BOLO-05

- 12 spare chambers

- New telescopes in 2019

first construction period Jan.-Mar.

- Liceo «Amaldi» – Bitetto
- Liceo «Calasanzio» – Carcare
- Liceo «Giolitti Gandino» - Bra
- Liceo «Volta» - Reggio Calabria

Welcome!



Tests chain

Test during construction:

- HV and
- Strips connectivity



Tests after construction:

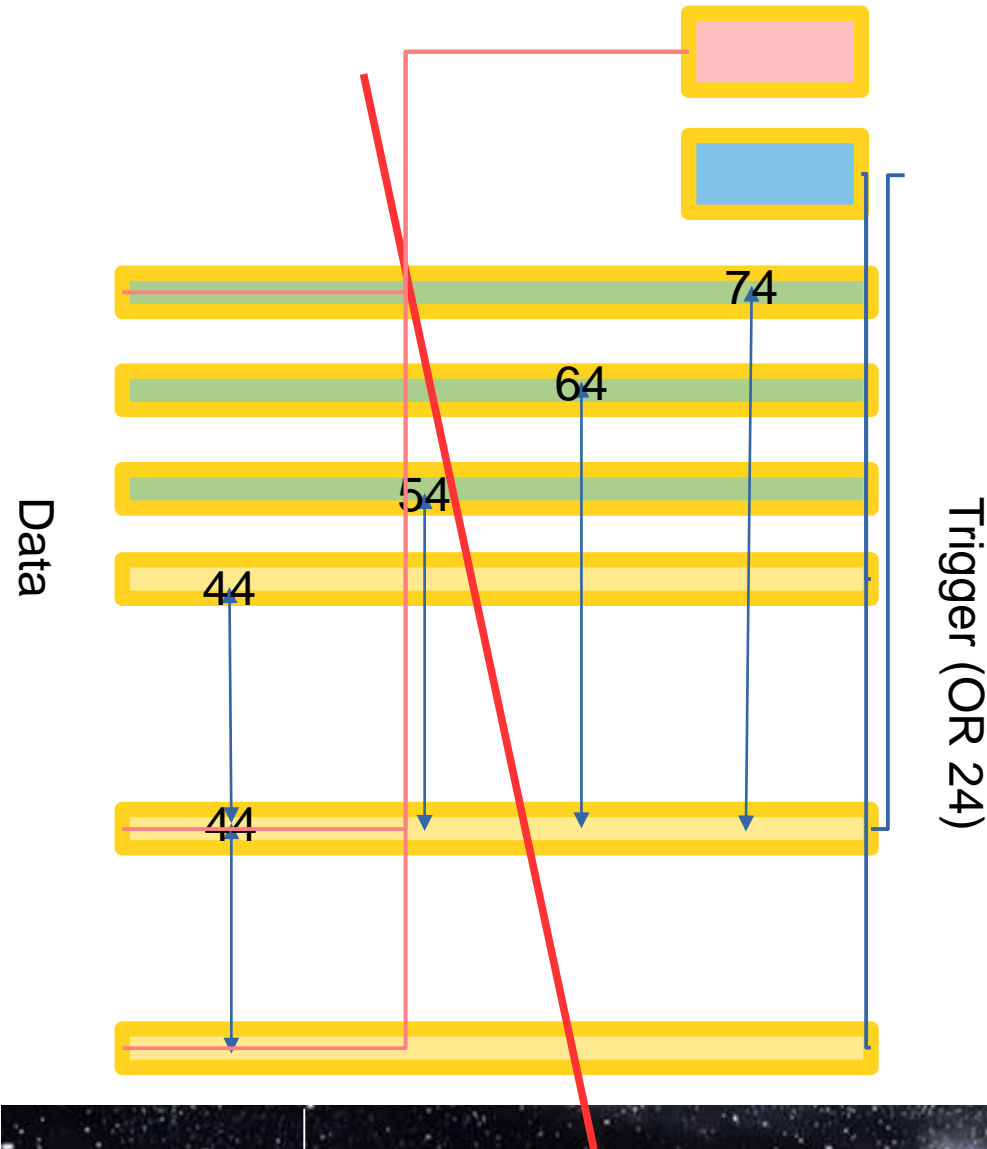
- Gas tightness
- Efficiency
- Dark rates
- Dark currents

Delivery



If any problem

Efficiency/counting rate/current tests



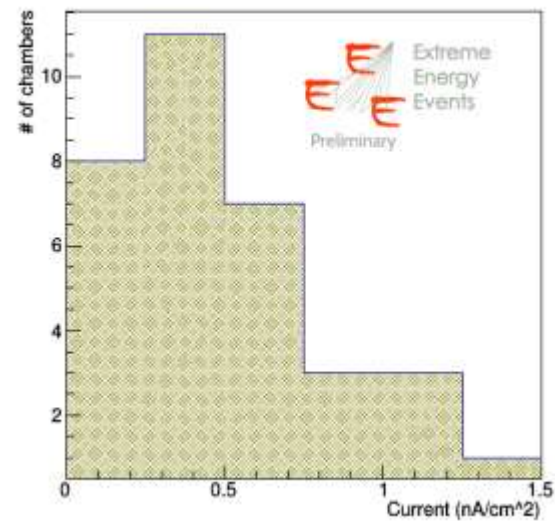
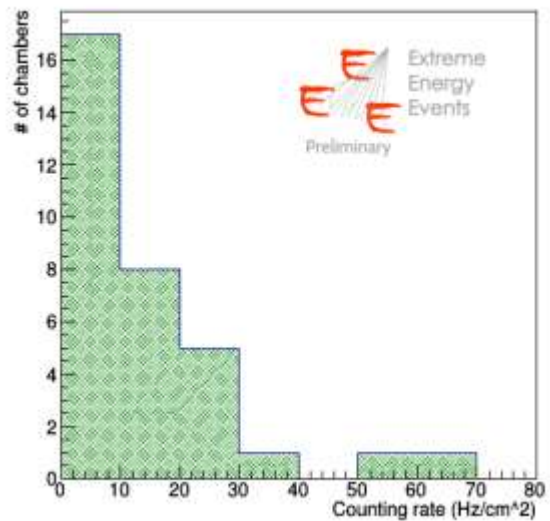
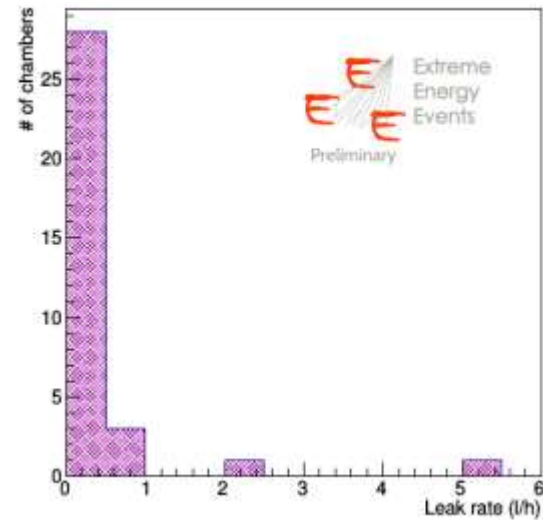
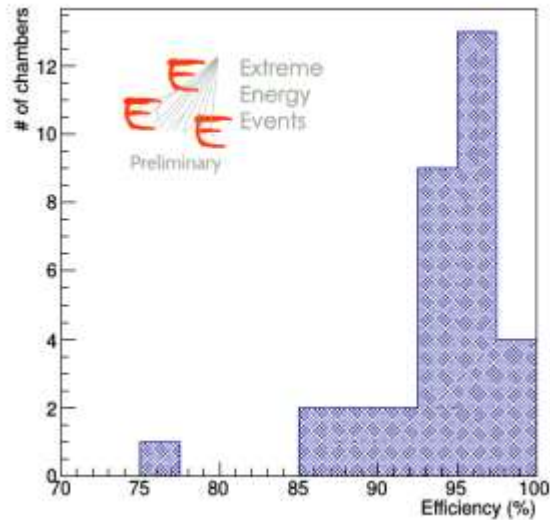
Efficiency is measured for the 3 chambers Above CERN-01 (green).

Chambers are fluxed 4 days before measurements
The trigger is the CERN-01.

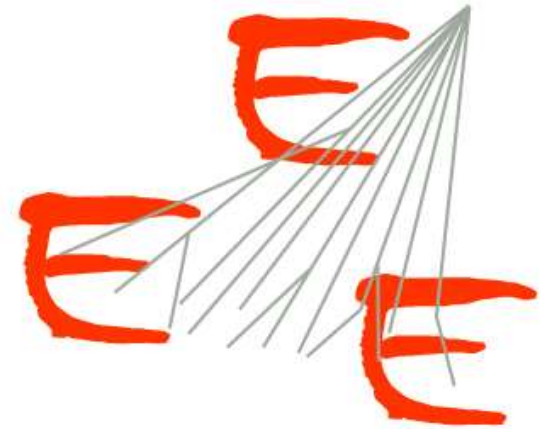
The data sent to DAQ come from CERN-01 bottom and middle chamber and one of the chambers under test.

By reconstructing tracks triggered by CERN-01, hits on tested chamber are searched.

Results on the first 33 chambers



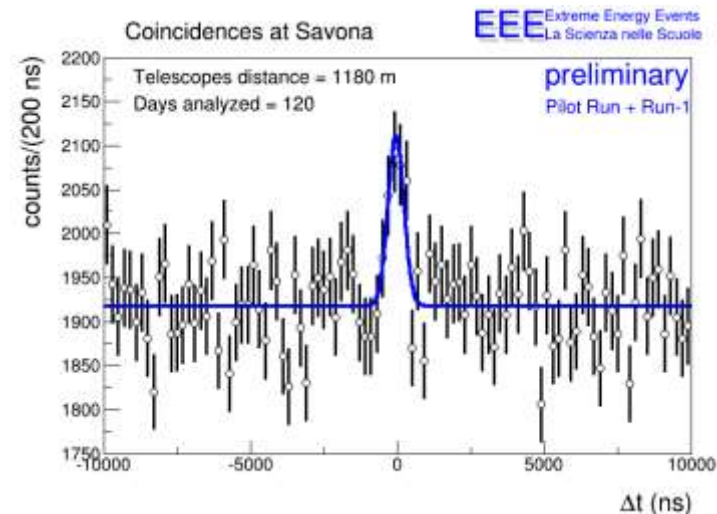
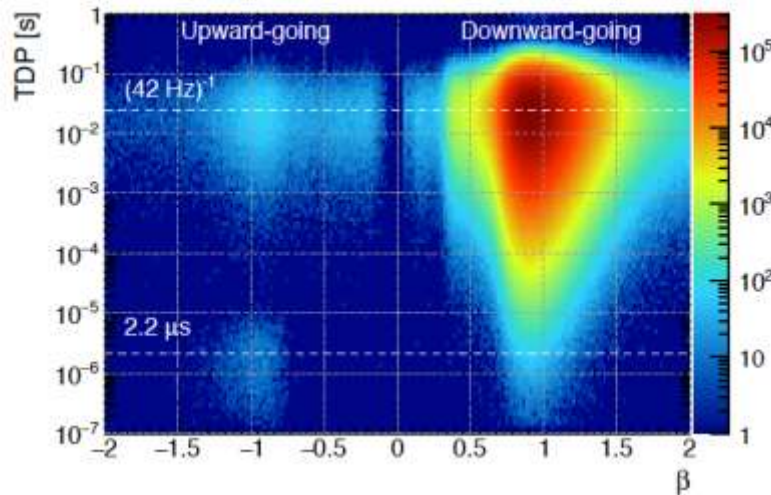
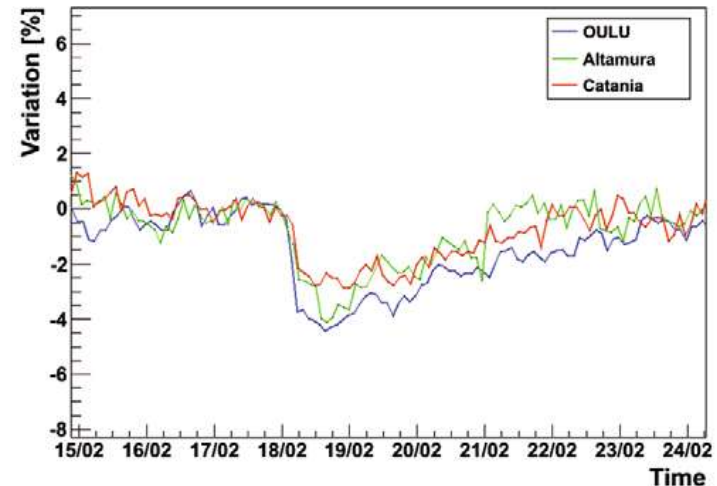
One selected
physics topic



EEE physics goals

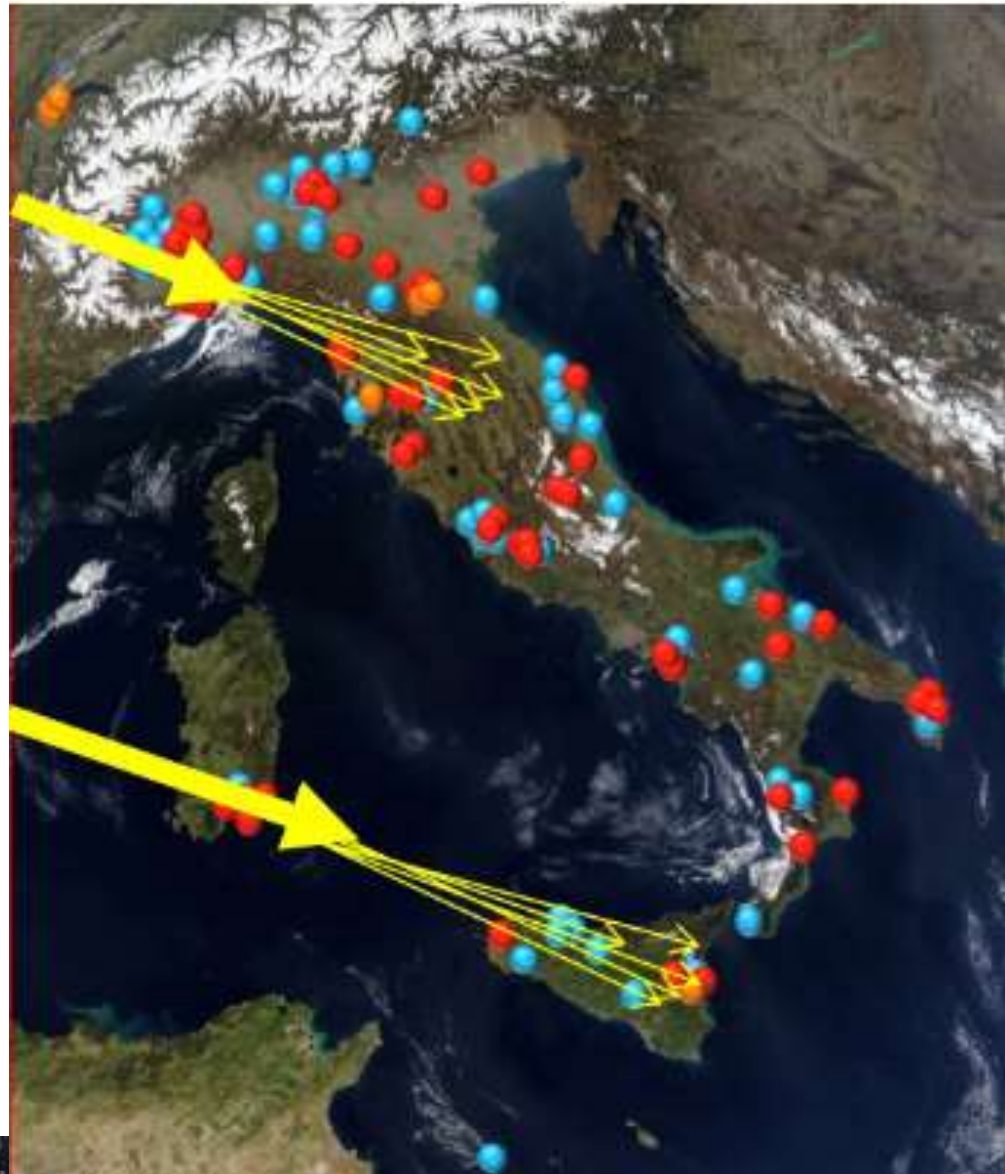
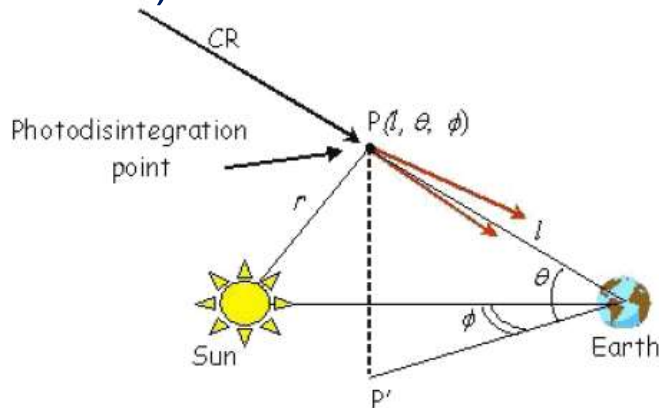
Examples of analyses carried out by the EEE Collaboration:

- ✓ Search for anisotropies
- ✓ Forbush decrease
- ✓ Upward going particles
- ✓ Detection of Extensive Air Showers
- ✓ Long Distance Correlations (LDC)



Search for long distance correlations

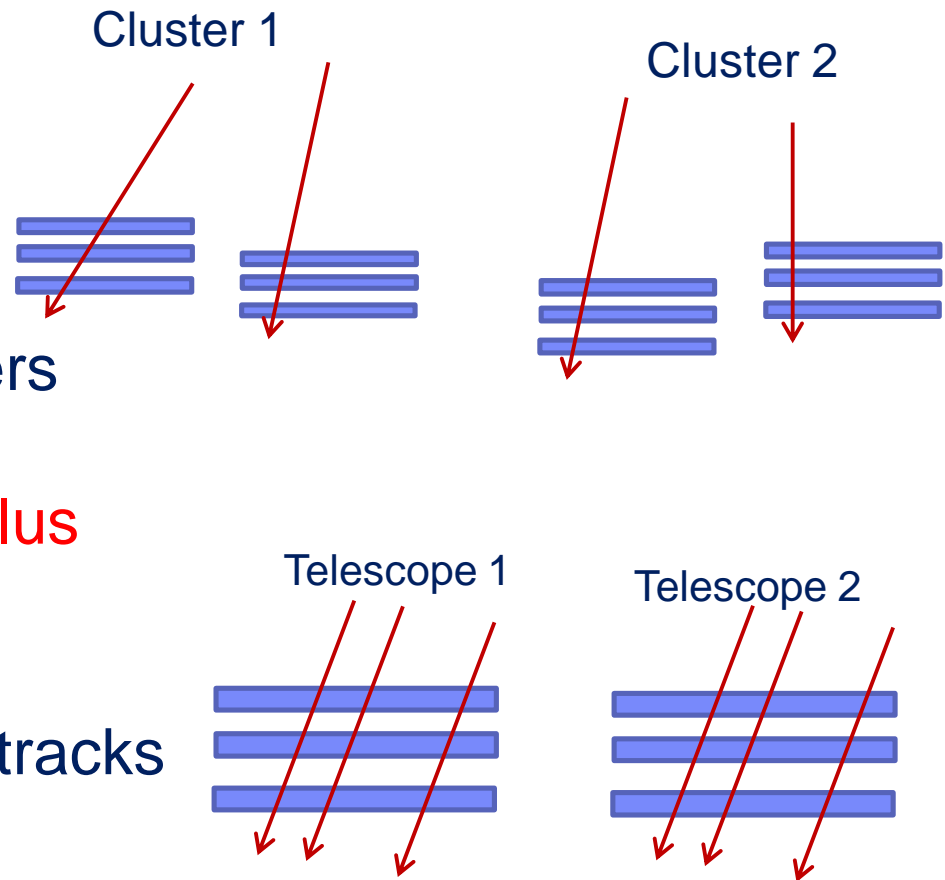
- EAS originating from cosemics emitted by the same source
- EAS originating from cosemics generated by the interaction of a primary cosmic with the interstellar medium
- EAS generated by the photodisintegration of primary cosmic rays in the solar field (GZ effect)



Rare events → negligible background needed

Two possible strategies:

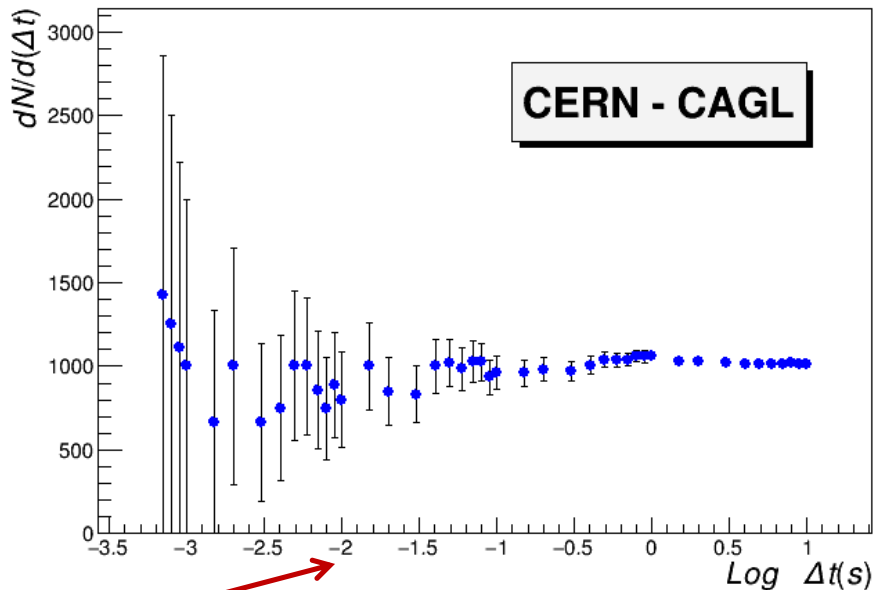
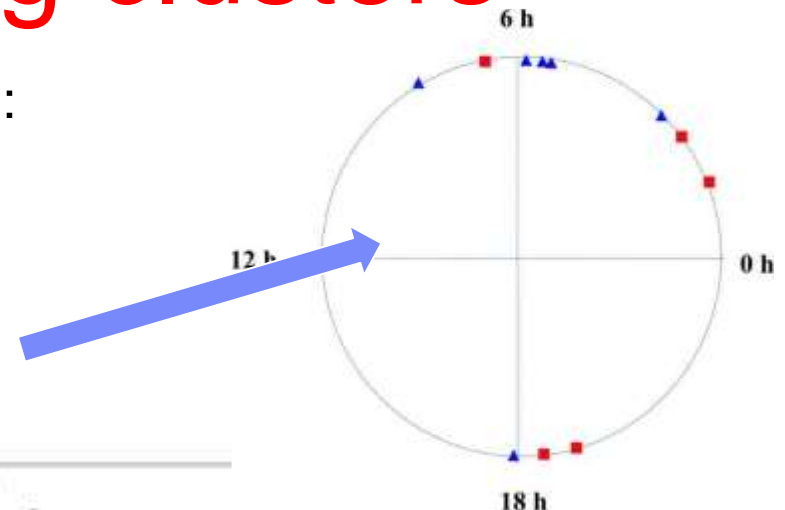
- Coincidences between clusters of telescopes
- **European Physics Journal Plus (2018) 133: 34**
- Coincidences between multi-tracks in pairs of telescopes



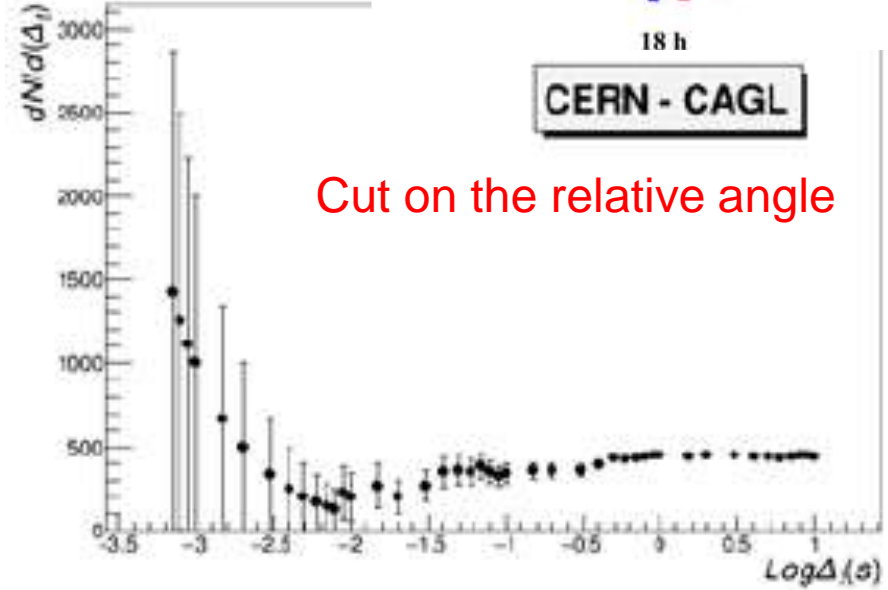
Coincidences among clusters

Not the same results for all pairs of clusters:
studies ongoing!

Distribution of the events during the day



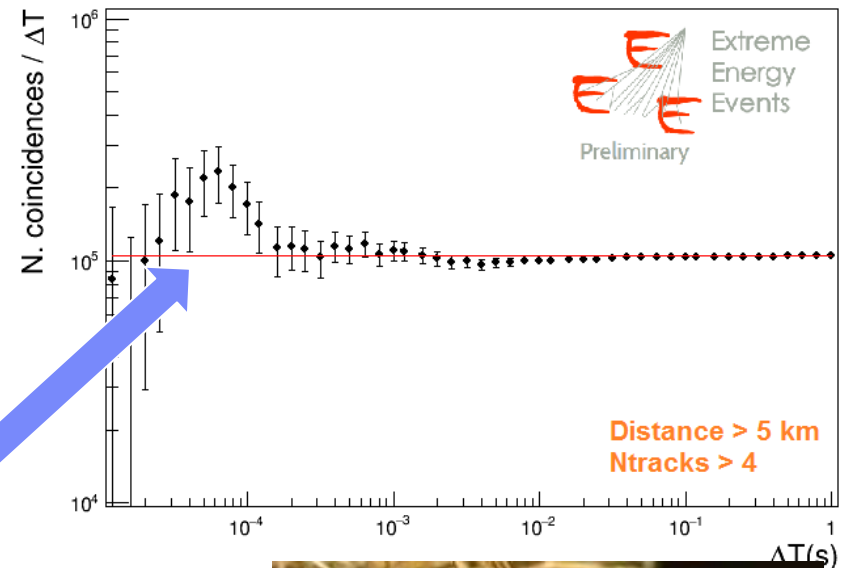
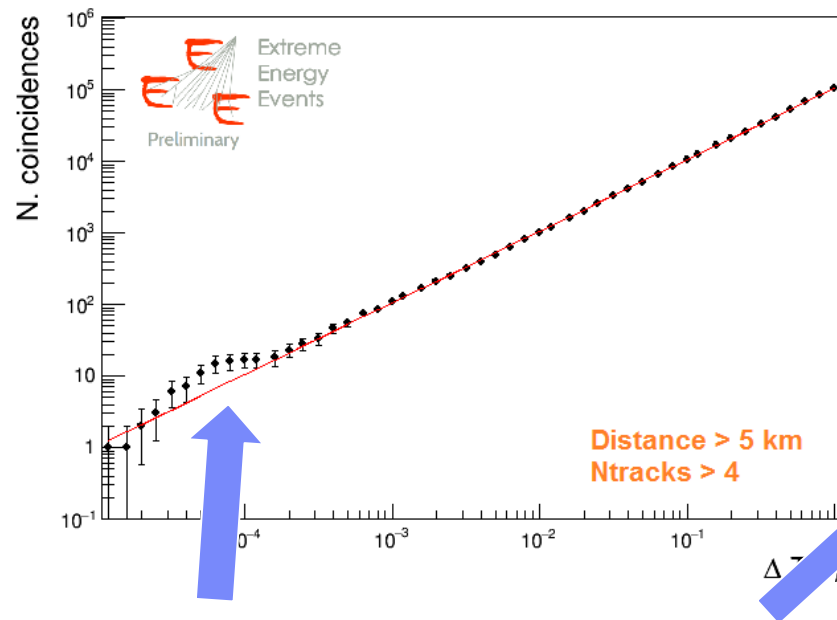
10 ms



Cut on the relative angle

LDC with multi-tracks

of coincidences between EEE sites as a function of the time coincidence window, compared with the expected accidental coincidence background (in red)

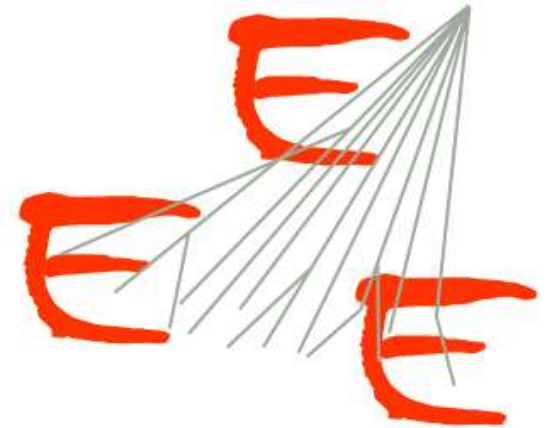


Possible LDC candidates?

Very few events among many, like a needle in a haystack

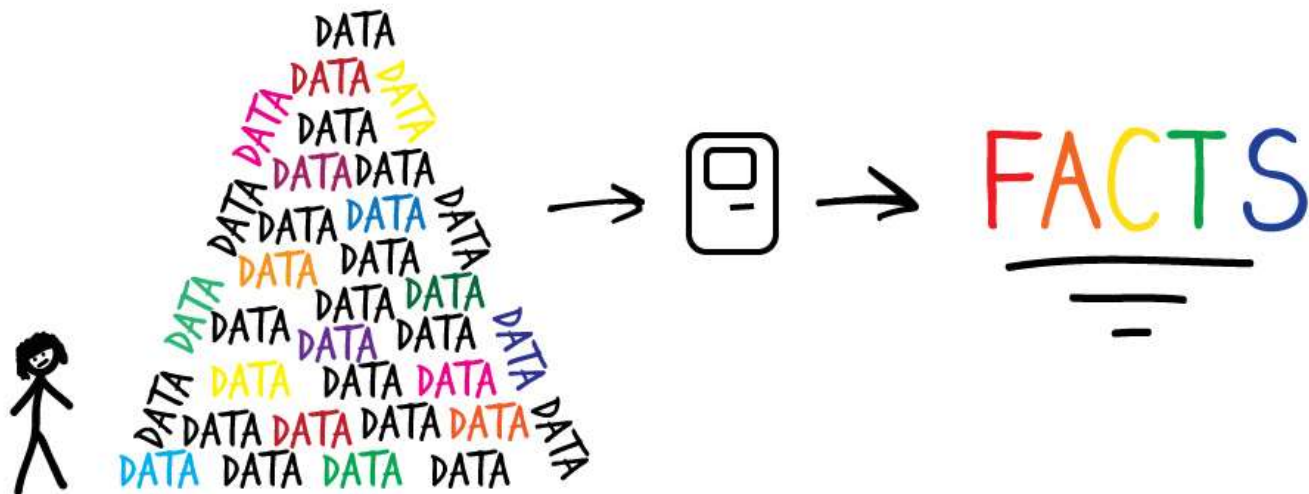


Plans for the future



Take a lot of data!

- We are looking for rare events
- We are an observatory:
we do not have control on when an interesting phenomenon will take place



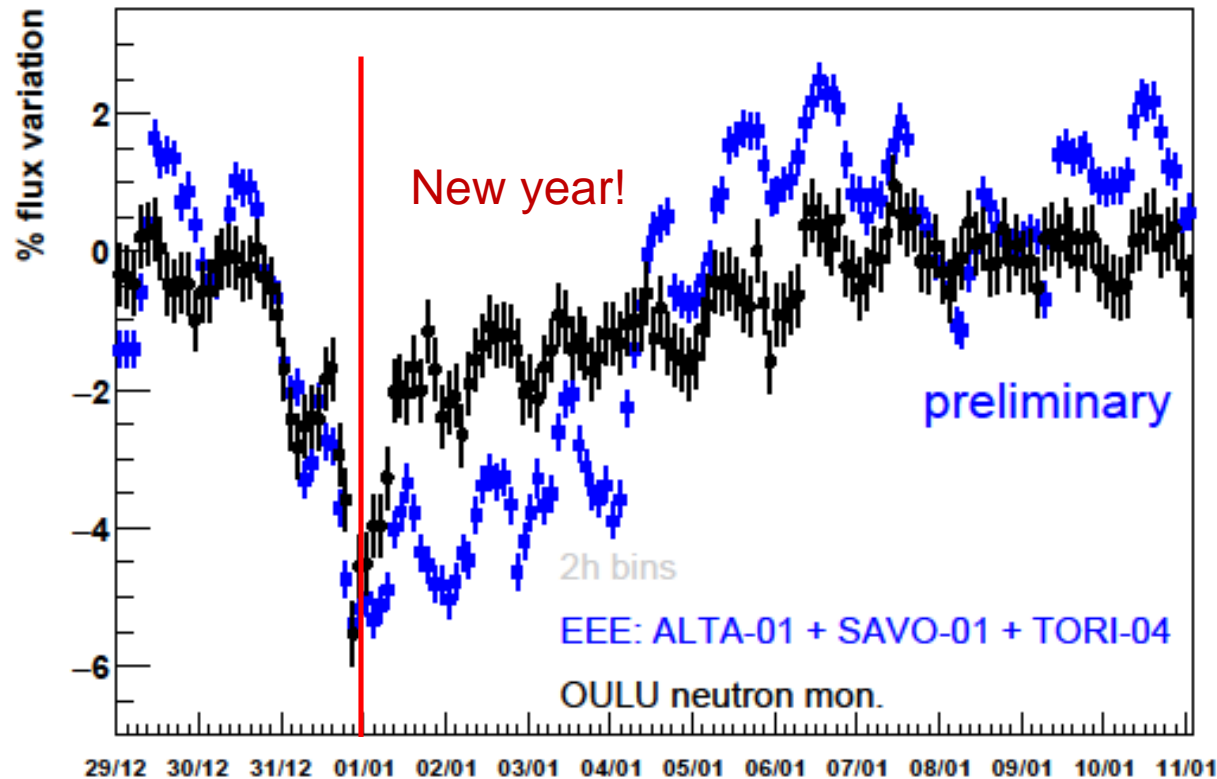
Being up h24...

The 2016 new year Forbush: at 24.00 of 31/12/2015 our telescopes **-in schools-** were up and running!



GCRD 2015-12-31: EEE-OULU fluxes

EEE Extreme Energy Events
La Scienza nelle Scuole



Being in EEE is an incredible occasion

- ✓ You are taking part to a real scientific experiment
- ✓ The instrumentation installed in your schools is unvaluable, in terms of cost and efforts
- ✓ You have the possibility to learn concepts and tools you do not generally use
- ✓ Experience done here is considered in many various environments

Where EEE does arrive



Being in EEE is hard work!

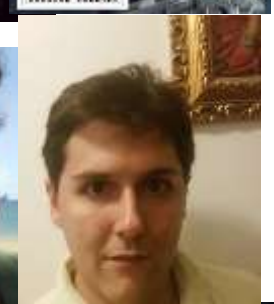
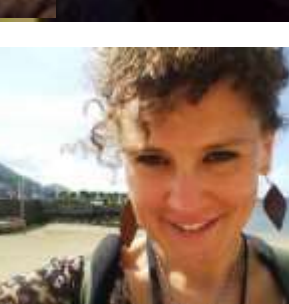
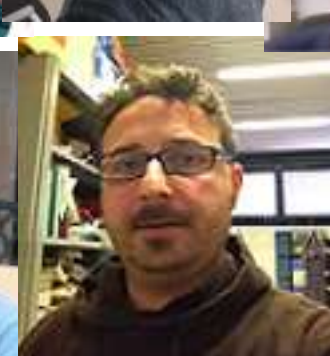
- ✓ By teachers, students, ALL
- ✓ The EEE experiment is based on collaborative work



- Read emails, diffuse them and react
- Take part and present to the EEE Run meetings open to schools
- Keep the telescope in operation
- Monitor the telescopes (ALL)

The EEE crew...

Carmelo, Corrado, Daniele, Edoardo, Fabrizio, Francesca, Francesco Nof.,
Francesco Noz., Francesco R. Giovanni, Giuseppe, Ivan, Luca, Marco B.,
Marco G., Marco P., Marco B., Marcello, Maria Paola, Nicola, Paola,
Rosario, Silvia P., Stefano, Antonio, ...



Thanks, have a safe trip back home

