

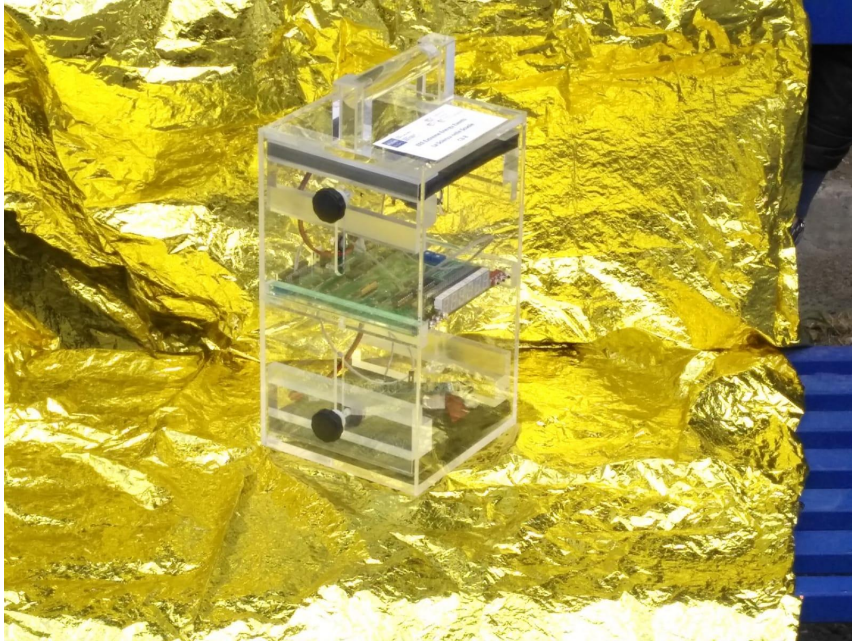


Variation of cosmic ray flux with altitude: from 0 to 2000m

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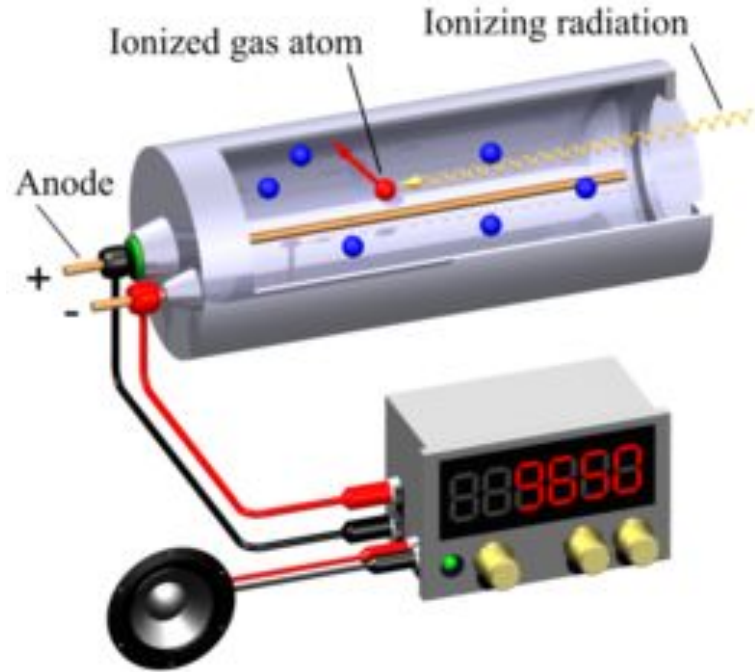
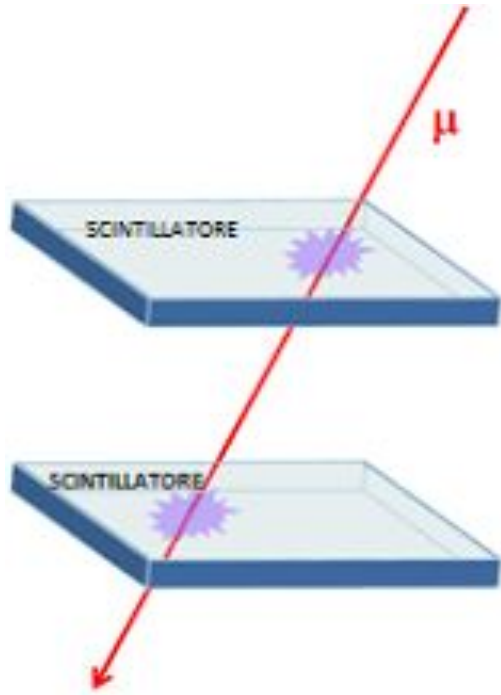
Liceo Scientifico "E. Fermi"
Paternò (CT)

The cosmic box contest



EEE project - A.S. 2018-2019

Cosmic Box and Geiger Counter



Previous work

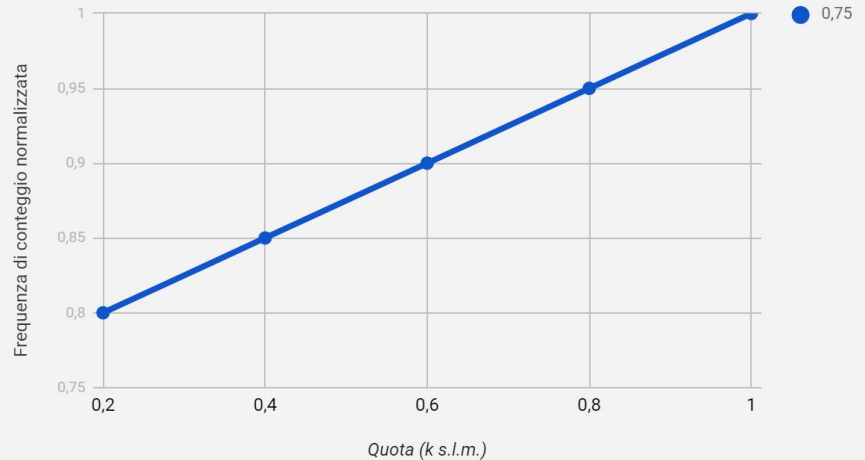
“How does cosmic ray flux vary with altitude? Let’s ask it to EEE project students” **Giornale di Fisica - July-September 2018**

Fermi Center - Historical Museum of Physics and “Enrico Fermi” Study and Research Center
Piazza del Viminale 1, 00184 Rome, Italy

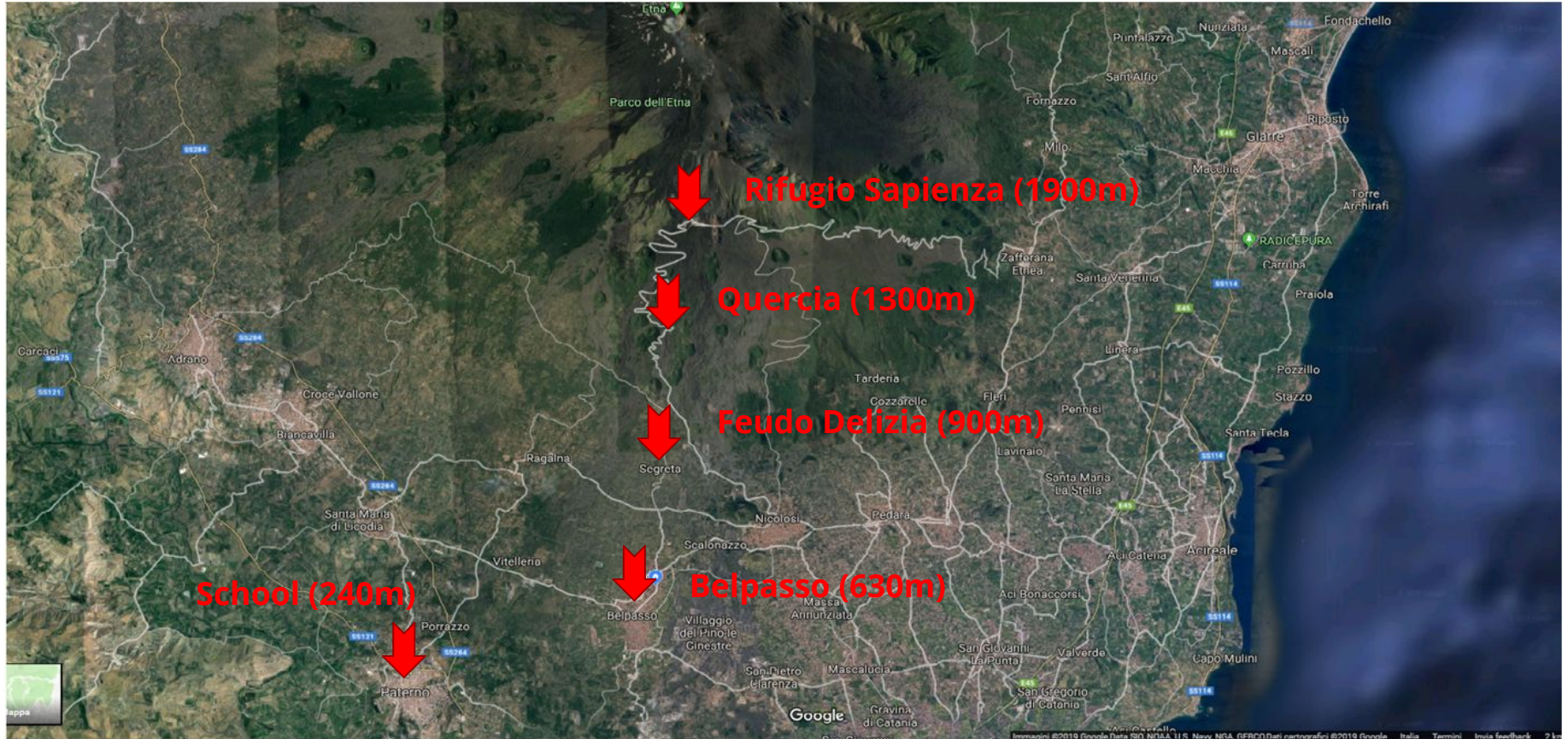
In this article they would present a measure of the flow of cosmic rays at different altitudes.

Today we want to show you the same thing but with more altitudes taken into consideration the previous data collection.

Misure di muoni a diverse altitudini col progetto EEE 2018

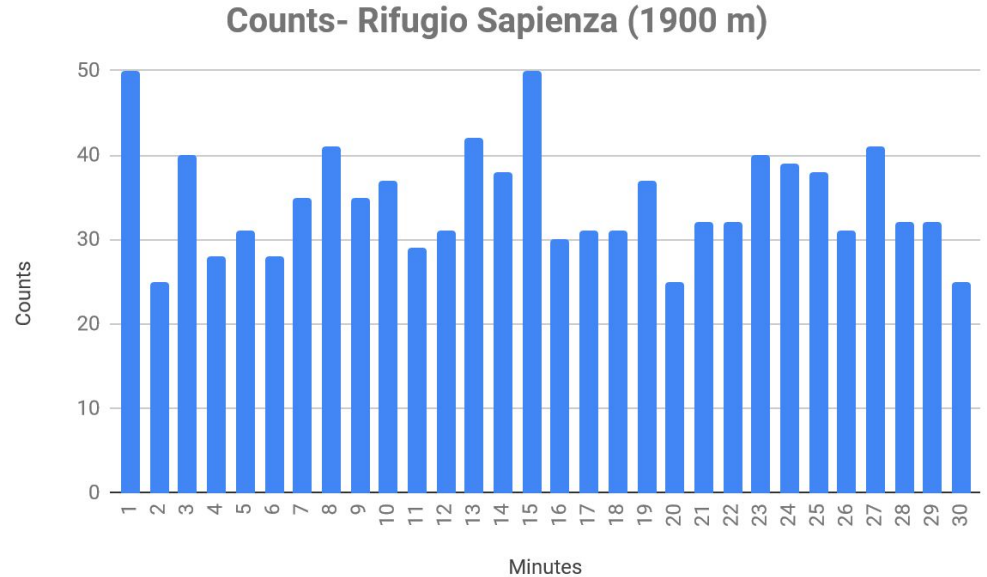


2019 Data Collection Maps



Measurements methodology

To measure the temporal distribution of events, it is necessary to record how many counts occur in a given time interval (Δt), in our case of 30 minutes, in particular, we recorded the counts every 60 seconds and this was done with three geiger counters and one cosmic box.

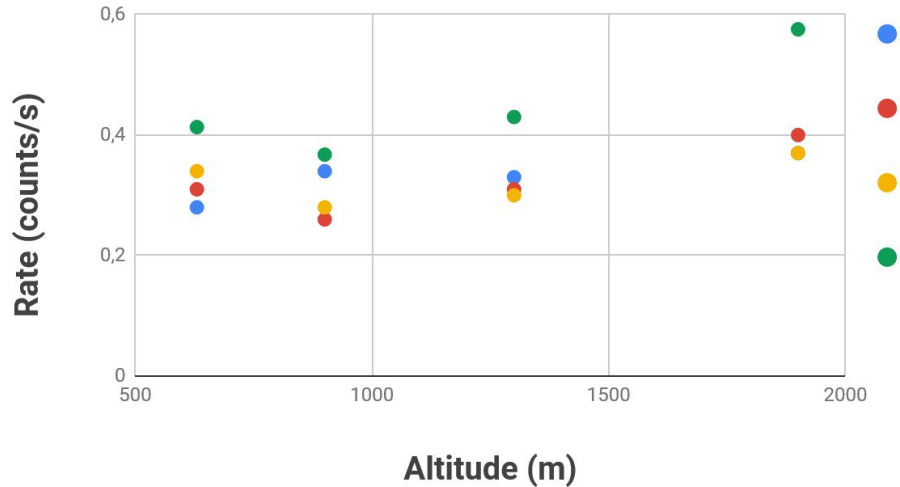


Cosmic Box counts at Rifugio Sapienza

Experimental results

	Belpasso 630m	Feudo Delizia 900m	Quercia 1300m	Rifugio Sapienza 1900m
Geiger 1	0,28	0,34	0,33	0,37
Geiger 2	0,31	0,26	0,31	0,40
Geiger 3	0,34	0,28	0,30	0,37
Cosmic Box	0,41	0,37	0,43	0,58

Rate with altitude



- ✓ same trend
- ✓ increase* of rate with altitude

Conclusions

- ★ At the 630 m and 900 m altitudes, experimental data show anomalies due to various factors (temperature, isolation, other sources...)
- ★ Differences between our data e the ones taken during Erice's conference in 2017*

*Average rates: from $(0,535 \pm 0,005)$ Hz at 20 m to $(0,666 \pm 0,002)$ Hz at 760 m

Future work

- ★ Error analysis
- ★ Comparison between theoretical and experimental data
- ★ Other measurements

Thanks for your attention