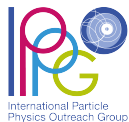


INTERNATIONAL COSMIC DAY

UNIVERSITÀ DI FIRENZE
21 novembre 2023
“To the **MUONS** and back”



In cooperation with
many networks and partners:



Logo
school/institute

SCHOOLS THAT CONTRIBUTED TO THE EXPERIMENT

Liceo Scientifico Amedeo di Savoia Duca d'Aosta, Pistoia

Istituto Marsilio Ficino, Figline Valdarno

Liceo Scientifico Agnoletti, Sesto Fiorentino

Liceo Scientifico Leonardo da Vinci, Florence

Liceo Scientifico Machiavelli, Florence

**We did this experiment in the beautiful University of
Florence, in the Physics department**

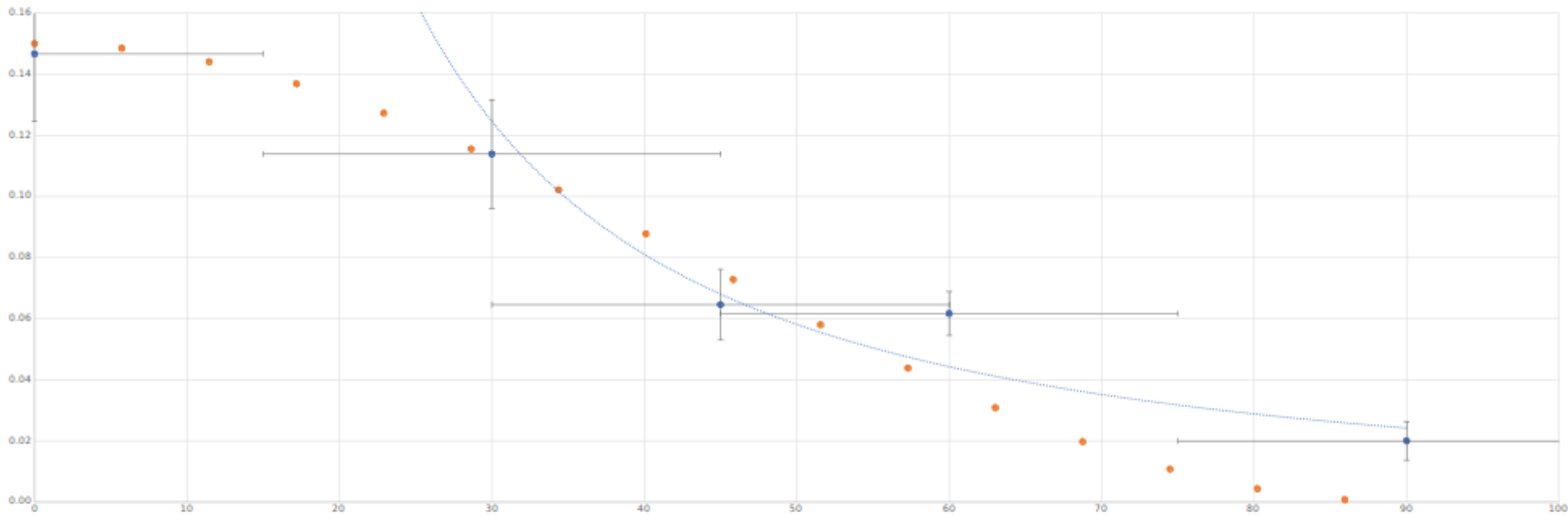
Experiment in the making

Our experience

- Our goal was to calculate the relation between the number of muons during a specific period of time. We also considered the Zenith angle.
- We divided in two groups, the first did the practical work: moving the detector at different angles, checking the number of muons and collecting the data
- The second one made graphics, data analysis, and presentation



θ (deg)	Conteggi	Tempo (s)	F (Hz)
$0^\circ \pm 15$	44 ± 7	300 Δ	$0,15 \pm 0,02$
$30^\circ \pm 15$	44 ± 6	360 Δ	$0,11 \pm 0,02$
$45^\circ \pm 15$	34 ± 6	480 Δ	$0,065 \pm 0,012$
$60^\circ \pm 15$	74 ± 9	1200 Δ	$0,062 \pm 0,007$
$90^\circ \pm 15$	106 ± 10	1800 Δ	$0,059 \pm 0,006$



θ (°)	ε_{θ} (°)	$\varepsilon_{\theta}^{rel}$	ΔN	$\varepsilon_{\Delta N}$	$\varepsilon_{\Delta N}^{rel}$	Δt (s)	$\varepsilon_{\Delta T}$ (s)	$\varepsilon_{\Delta t}^{rel}$	F(θ)	$\varepsilon_{F(\theta)}$	$\varepsilon_{F(\theta)}^{rel}$
0	15		44	7	0.15	300	1.00E-05	3.333333E-08	0.15	0.02	0.15
30	15	0.50	41	6	0.16	360	1.00E-05	2.777778E-08	0.114	0.018	0.16
45	15	0.33	31	6	0.18	480	1.00E-05	2.083333E-08	0.065	0.012	0.18
60	15	0.25	74	9	0.12	1200	1.00E-05	8.333333E-09	0.062	0.007	0.12
90	15	0.17	10	3	0.32	500	1.00E-05	2E-08	0.020	0.006	0.32

rad	gradi	cos	cos ⁿ	n	b	b*cos ⁿ
0	0	1	1	2	0.15	0.15
0.1	6	0.99500416527803	0.99003328892062			0.148504993338093
0.2	11	0.98006657784124	0.96053049700144			0.144079574550216
0.3	17	0.95533648912561	0.91266780745484			0.136900171118226
0.4	23	0.92106099400289	0.84835335467358			0.127253003201037
0.5	29	0.87758256189037	0.77015115293407			0.115522672940111
0.6	34	0.82533561490968	0.68117887723834			0.10217683158575
0.7	40	0.76484218728449	0.58498357145012			0.087747535717518
0.8	46	0.69670670934717	0.48540023884936			0.072810035827403
0.9	52	0.62160996827066	0.38639895265346			0.057959842898018
1	57	0.54030230586814	0.29192658172643			0.043788987258964
1.1	63	0.45359612142558	0.20574944137233			0.030862416205849
1.2	69	0.36235775447667	0.13130314222938			0.019695471334407
1.3	74	0.26749882862459	0.07155562331553			0.010733343497329
1.4	80	0.16996714290024	0.02888882966567			0.004333324449851
1.5	86	0.0707372016677	0.00500375169978			0.000750562754967

CONCLUSIONS

- We studied the muons flux in relation to the Zenith angle in a certain period of time.
- Data acquisition and data analysis
- Confirmation of the theoretical model

