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11° Conferenza dei Progetti del Centro Fermi – Progetto EEE



Extreme
Energy
Events
Science inside Schools

PROGETTO EEE ANATOMIA DI UN RUN

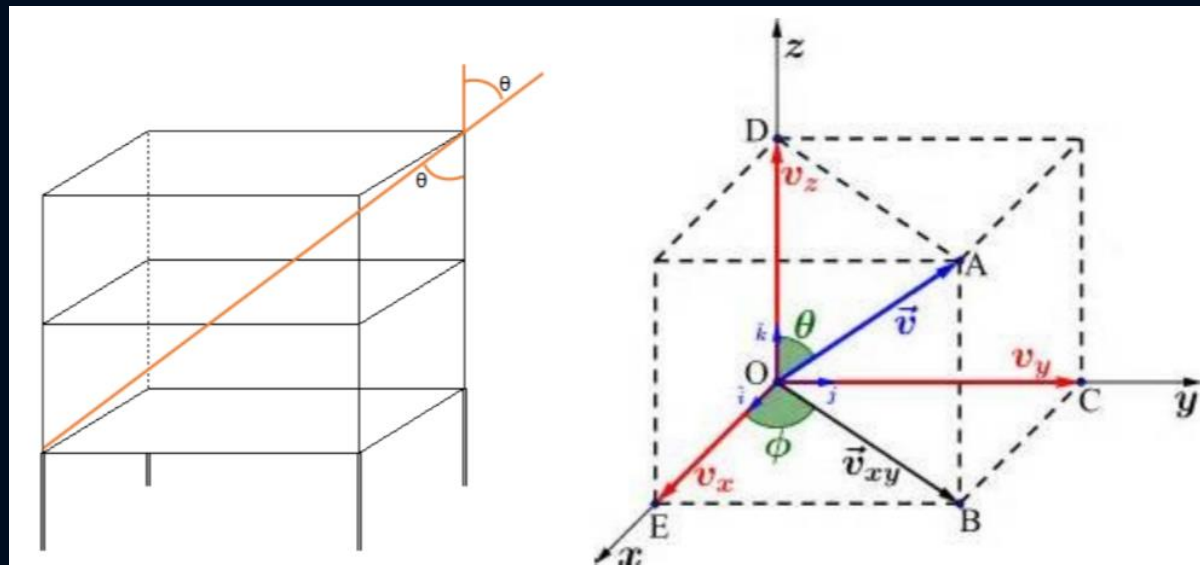
GIULIA CARLETTO E AUGUSTO MANTICA

Liceo Scientifico Vittorio Veneto, Milano
Giulia Carletto e Augusto Mantica classe IV
27 maggio 2020

Tabella degli esiti più significativi dell'elaborazione

1) comprendere il fenomeno fisico dei raggi cosmici secondo:

- la direzione di provenienza θ, ϕ
- la distribuzione degli eventi in funzione della lunghezza della traccia
- tempo di volo $T-o-F$
- chi-quadro X_2
- velocità V



2) avere una visione d'insieme dei dati più significativi del RUN



REPORT

Summary of significant RUN data			
LODI-01-	2017-01-25	-00060	
RUN n°	60	del	25/01/2017
Run Start (ora solare)	13h 3m 28s		
Run End (ora solare)	13h 17m 52s		
Δt	864s		
UTC (Tempo Coord. Univ.)	12h 3m 28s	PS (Global Positioning System)	12h 3m 45s
LMST (Local Mean Sidereal Time)	21h 27m 3s		
Total events	50.000		
The percentages related to these two values are calculated on the total	Hits-events	44.938	89,88%
	NO-Hits-events	5.062	10,12%
All the percentages below are calculated on Hits	$\chi^2 > 10$	2.232	4,97%
	T-o-F < 0	379	0,84%
	T-o-F < 0 and $\chi^2 > 10$	260	0,58%
	T-o-F < 0 and $\chi^2 < 10$	119	0,26%
	Events with $\chi^2 < 10$ and T-o-F > 0	42.587	94,77%
Events with speed $\leq 3,0 \cdot 10^3$ m/s	23.124	51,46%	
Events with speed $> 3,0 \cdot 10^3$ m/s	21.810	48,53%	
Events with $\chi^2 < 10$, T-o-F > 0 and $\theta < 50,57^\circ$	42.270	94,06%	
Events with $\chi^2 < 10$, T-o-F > 0 and $\theta > 50,57^\circ$	316	0,70%	
Total Rate (calculated on 50.000 events)	57,9 Hz		
Rate of Hits scored	52 Hz		
Track length Min	93 cm.		
Track length Max*: Hits-events	193 cm.	0 Tr > 201	
Events with a track length of 93 cm. at 98 cm. ($0^\circ < \theta < 18^\circ$)	17.177	38,22%	
*The largest diagonal of the telescope measures 201 cm.			
La pressione e la temperatura sono scaricabili dal sito:	Pressure (hPa)	1013	
https://iatw.cnaif.infn.it/eee/monitor/dqm2/LODI-01/	T(C°)-Indoor	24	
Per scaricare la mappa celeste relativa periodo di RUN collegarsi al sito:	https://www.arcetri.astro.it/po/sky_maps/		
		297,15 ° K	

Hits-events	44.938	89,88%
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Events with $\chi^2 < 10$ and T-o-F > 0	42.587	94,77%
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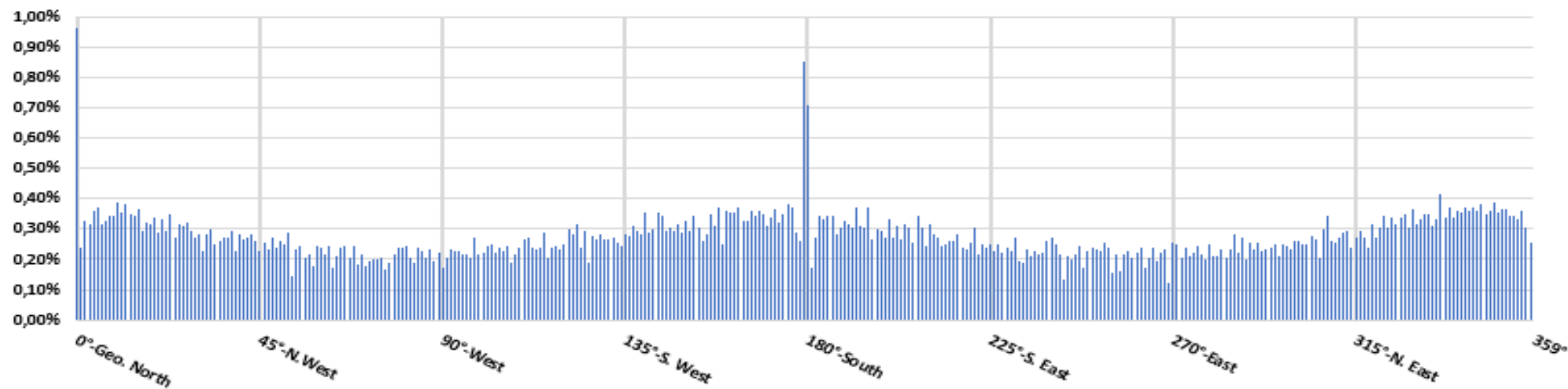
Total Rate (calculated on 50.000 events)	57,9 Hz
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Rate of Hits scored	52 Hz
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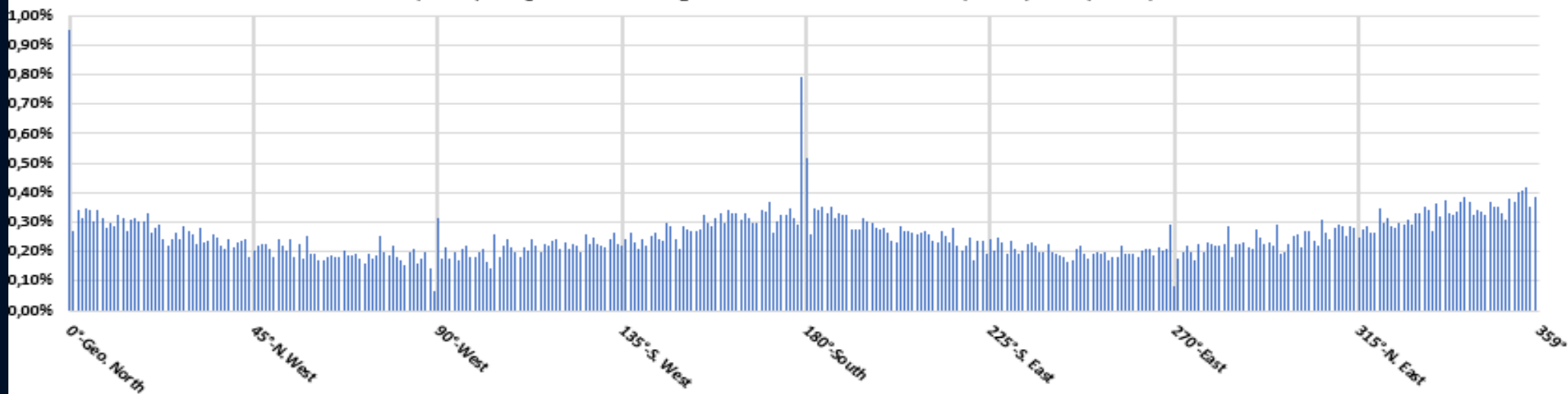
Events (%)

[1] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal angle ϕ . All events (44938). Step 1°. The average and maximum are: 124,83(0,28%) - 432(0,96%)

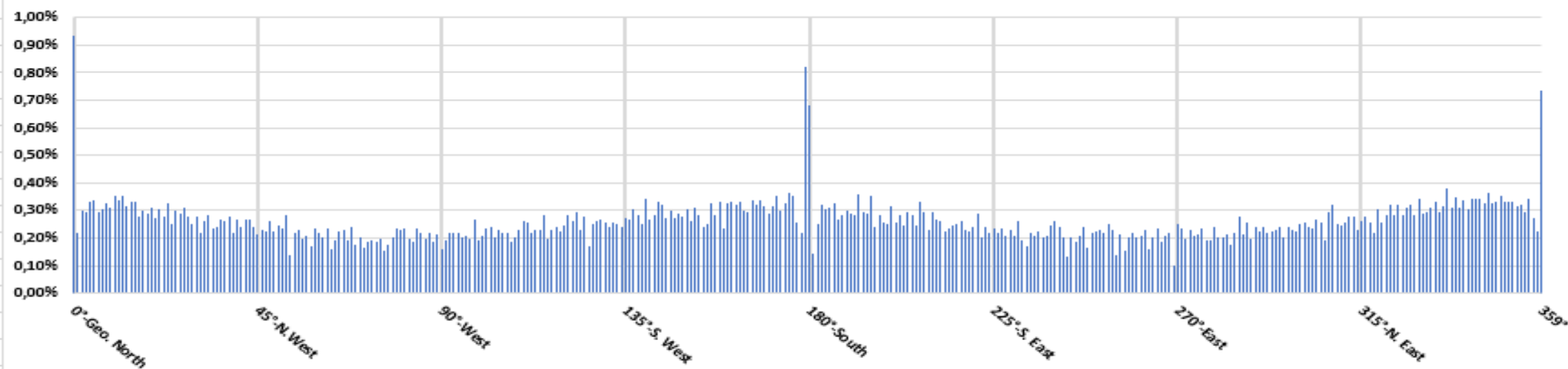


Events (%)

[2] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal angle ϕ . Events with: $\chi^2 < 10$ and TOF > 0 (42587). Step 1°. The average and maximum are: 118,29(0,26%) - 422(0,94%)

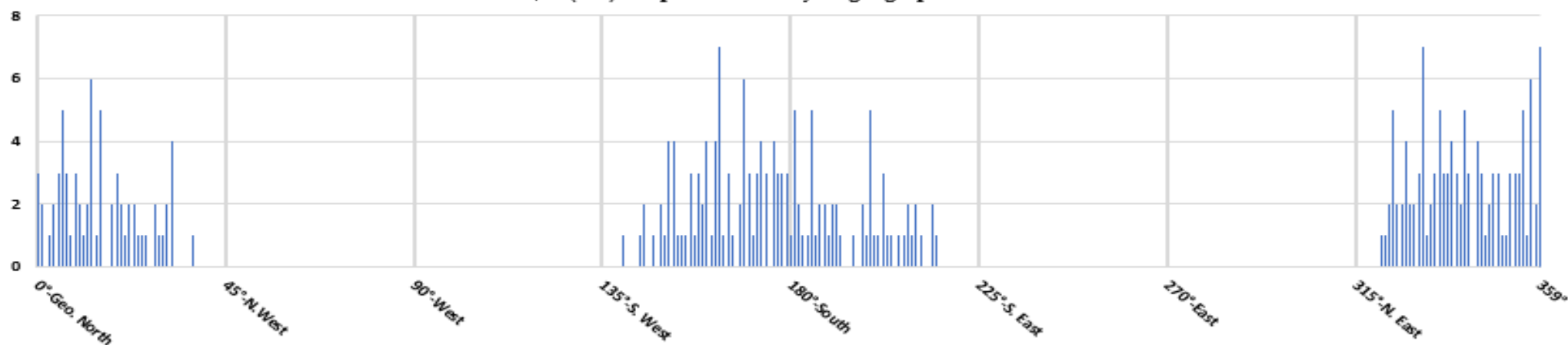


[3] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal angle ϕ . Events with: $\chi^2 < 10$, $ToF > 0$ and $\theta < 50,57$ (42270). Step 1° . The average and maximum are: 117,42(0,26%) - 419(0,93%)

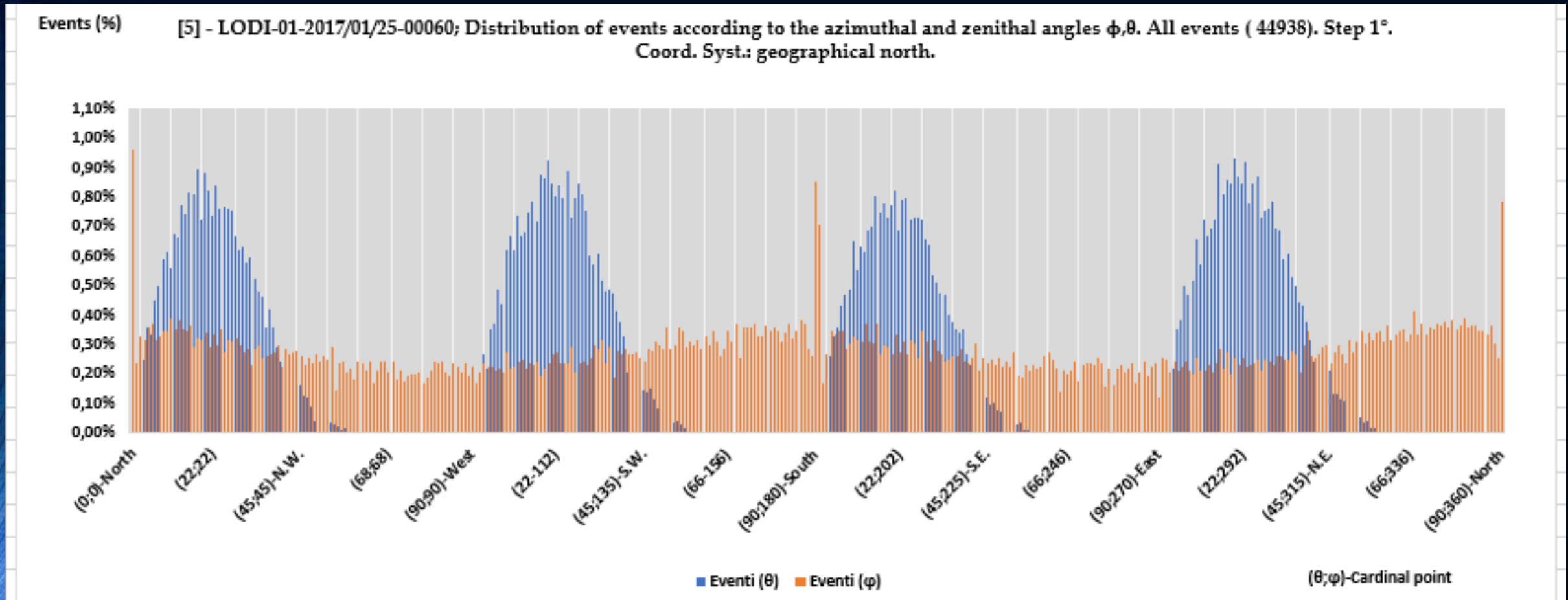


Events

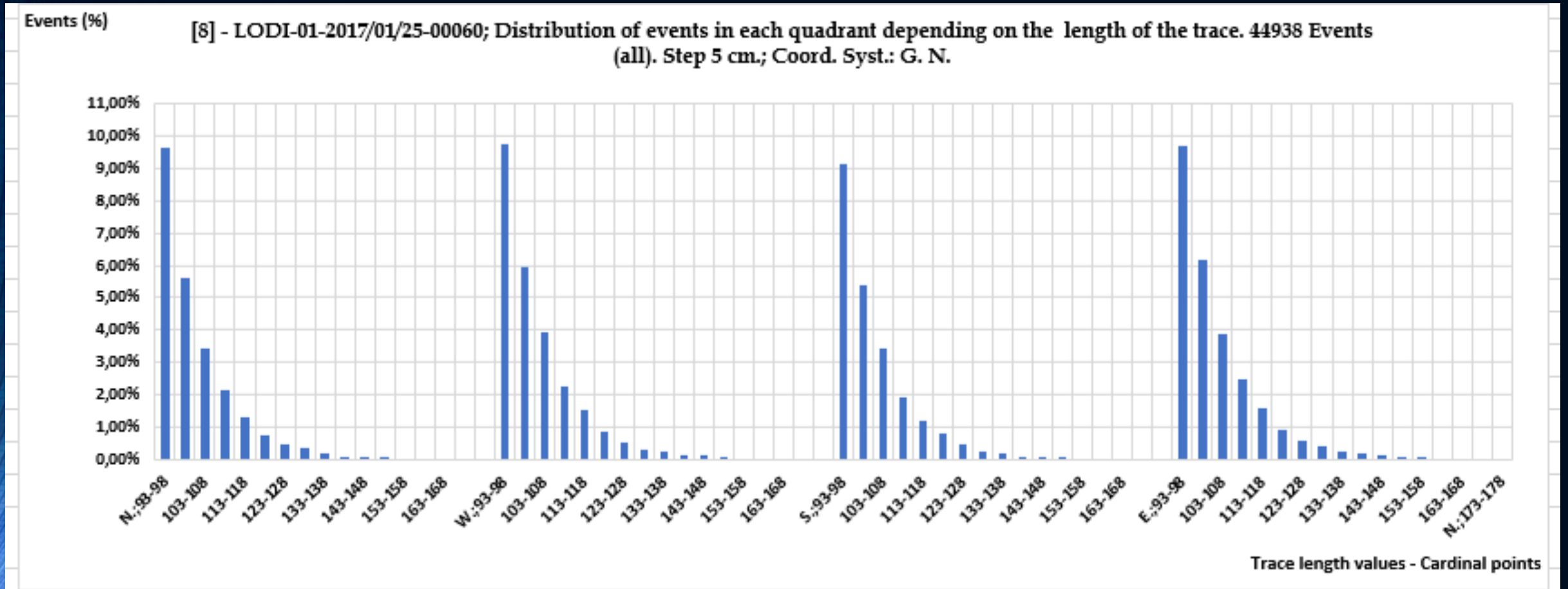
[4] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal angle ϕ . Events with: $\chi^2 < 10$, $ToF > 0$ and $\theta > 50,57$ (316). Step 1° . Coord. Syst.: geographical north.



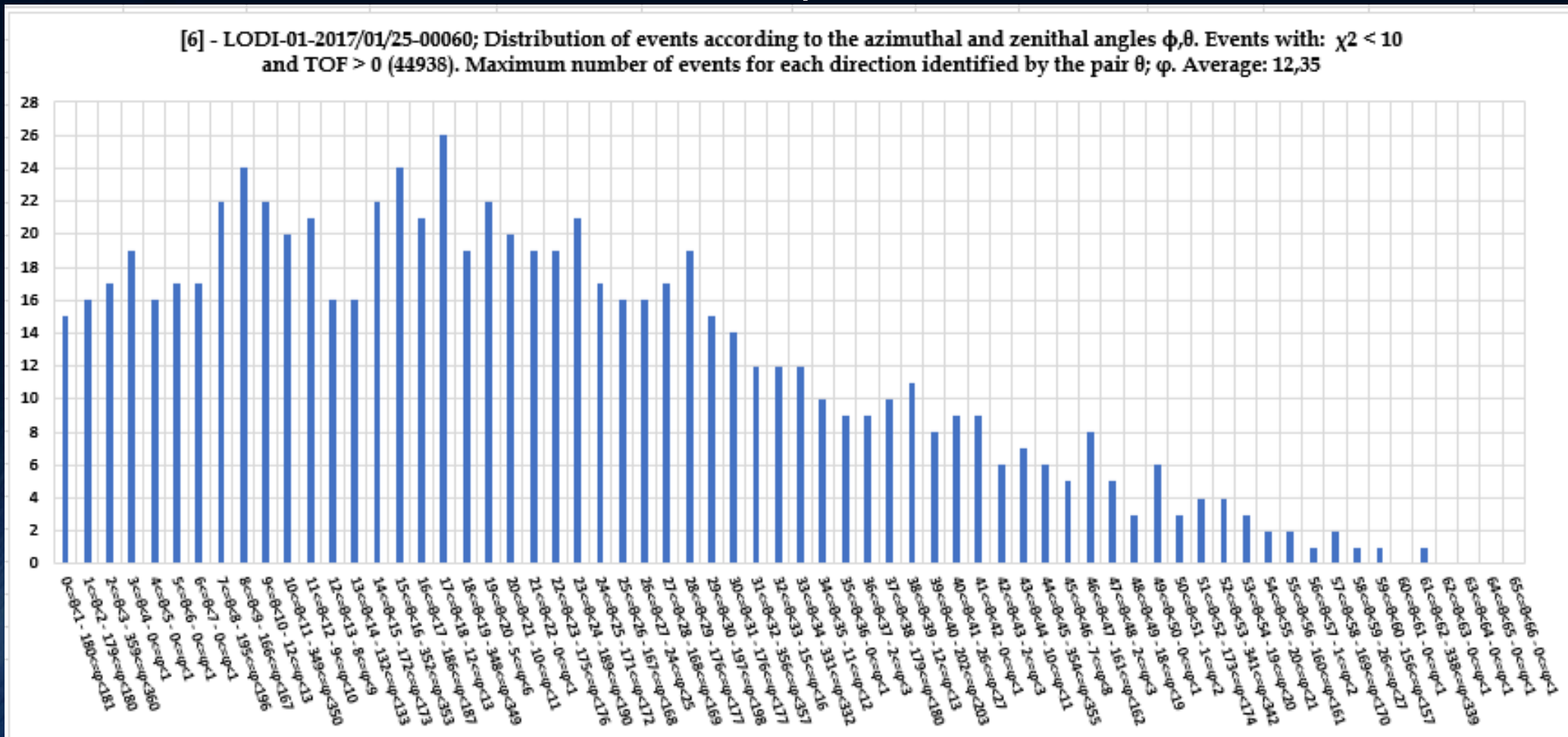
Osservazioni sulla distribuzione di tutti gli eventi Hits secondo gli angoli azimutale φ e zenitale Θ



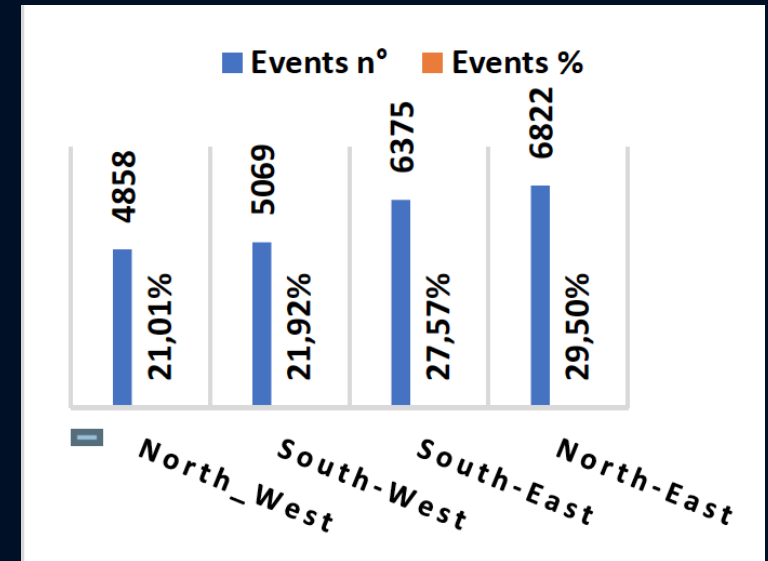
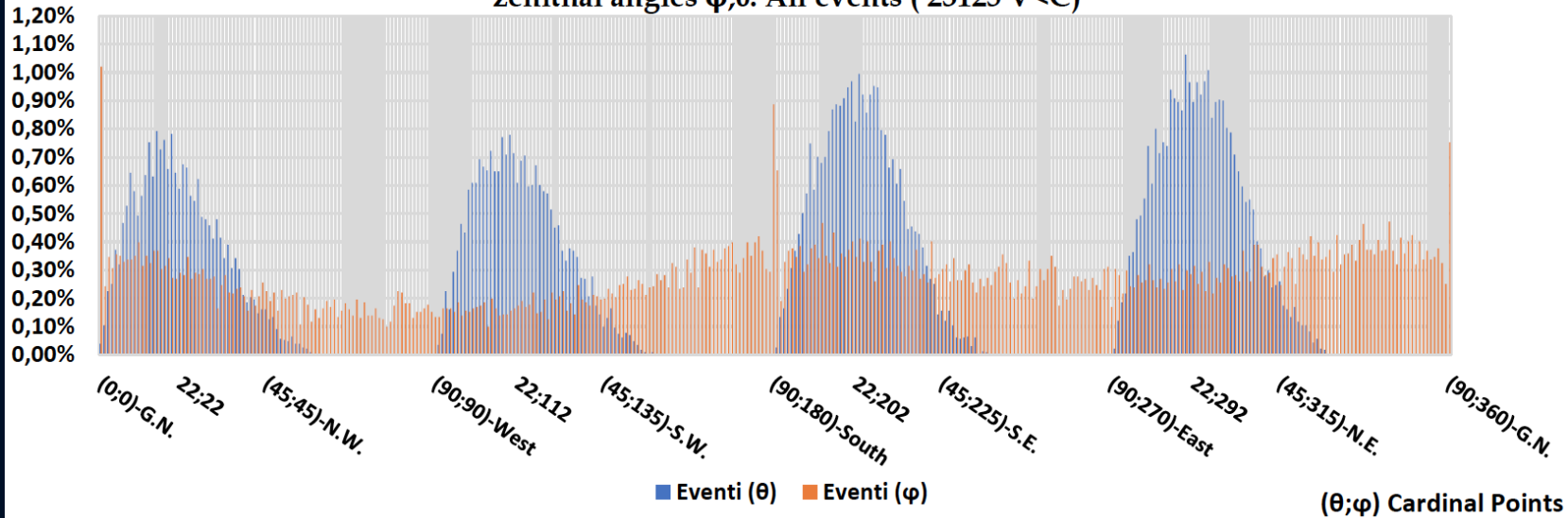
Osservazioni sulla distribuzione degli eventi in ciascun quadrante a seconda della lunghezza della traccia



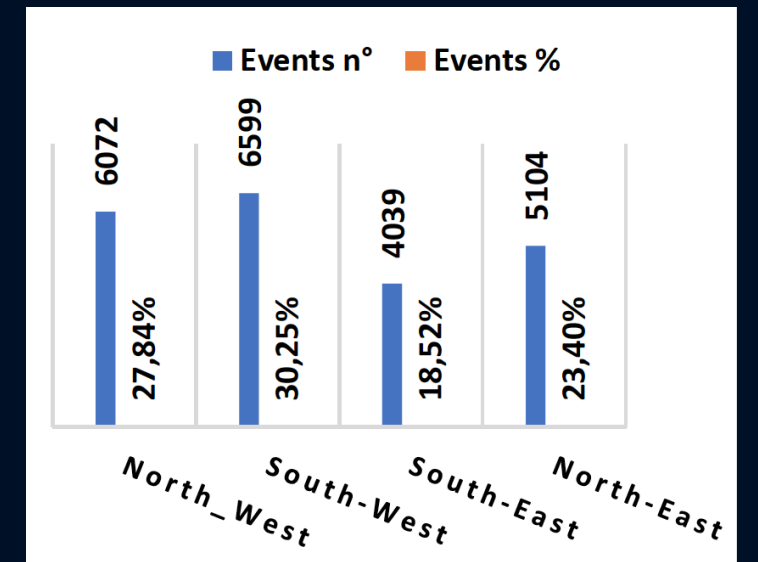
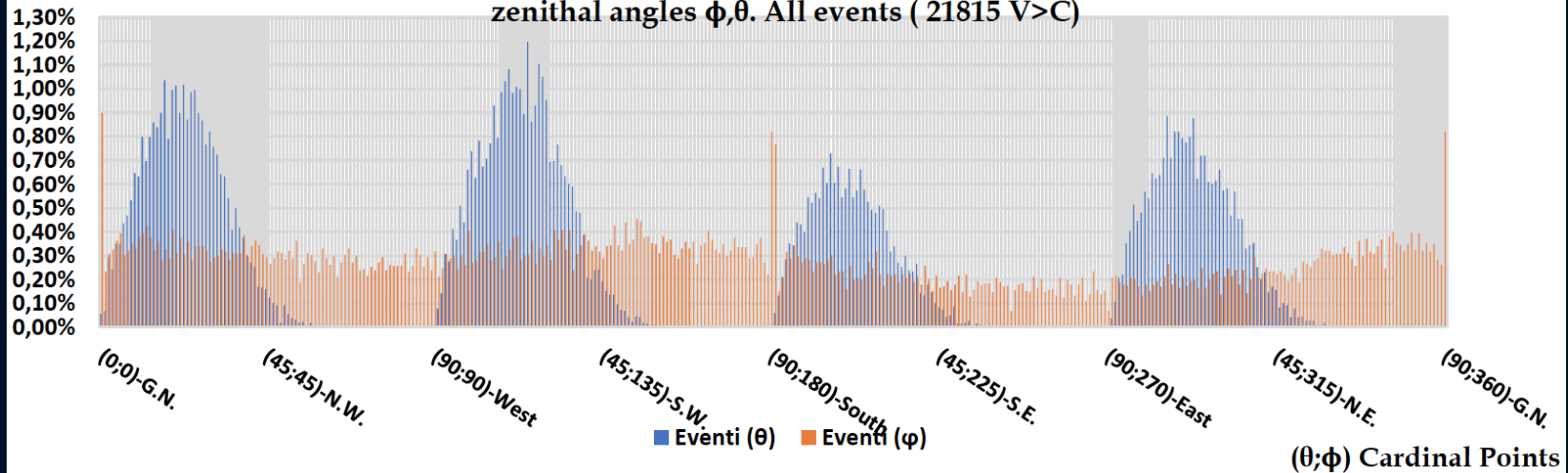
Osservazione sulla direzione di origine dei muoni considerando il numero massimo di essi per ciascun angolo zenitale e l'angolo azimutale corrispondente (θ, φ)



[16] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal and zenithal angles ϕ, θ . All events (23125 $V < C$)

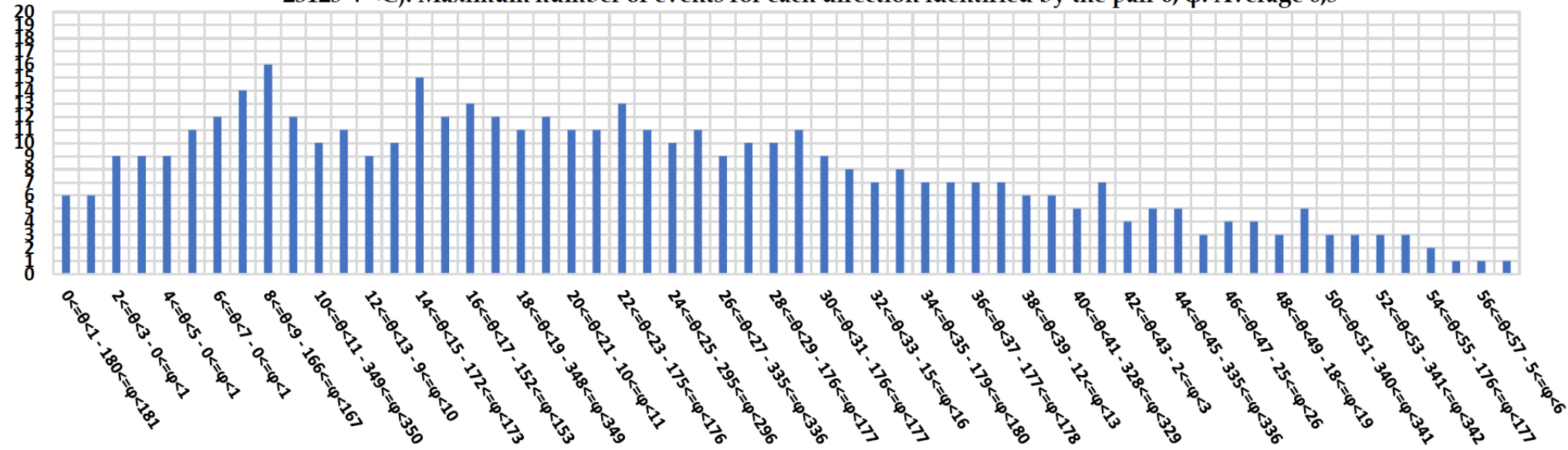


[17] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal and zenithal angles ϕ, θ . All events (21815 $V > C$)



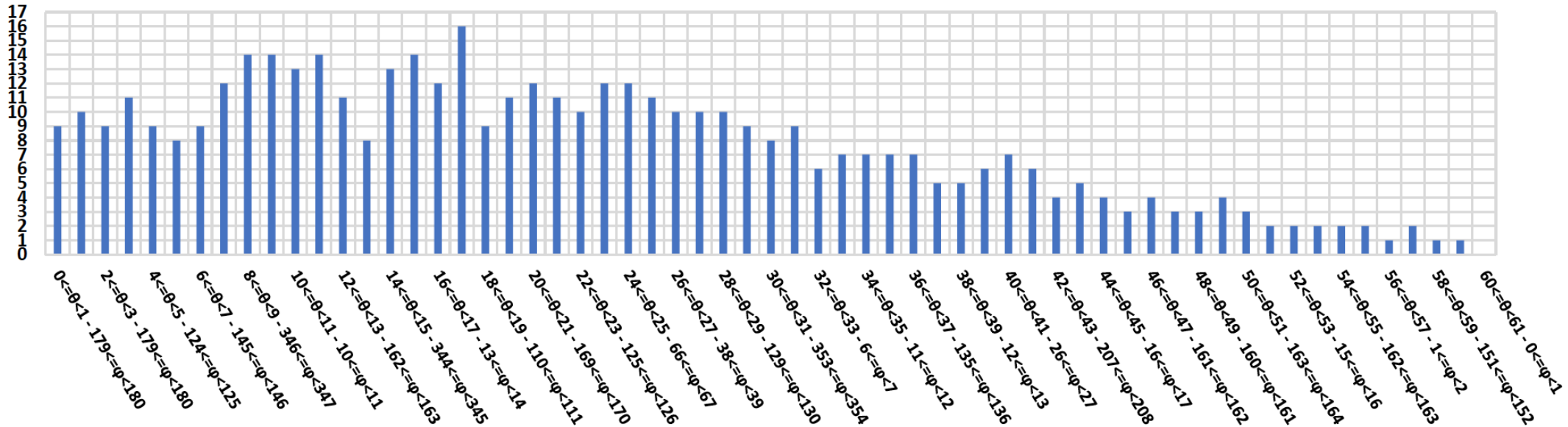
Events

[18] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal and zenithal angles ϕ, θ . All events (23125 V<C). Maximum number of events for each direction identified by the pair $\theta; \phi$. Average 6,5



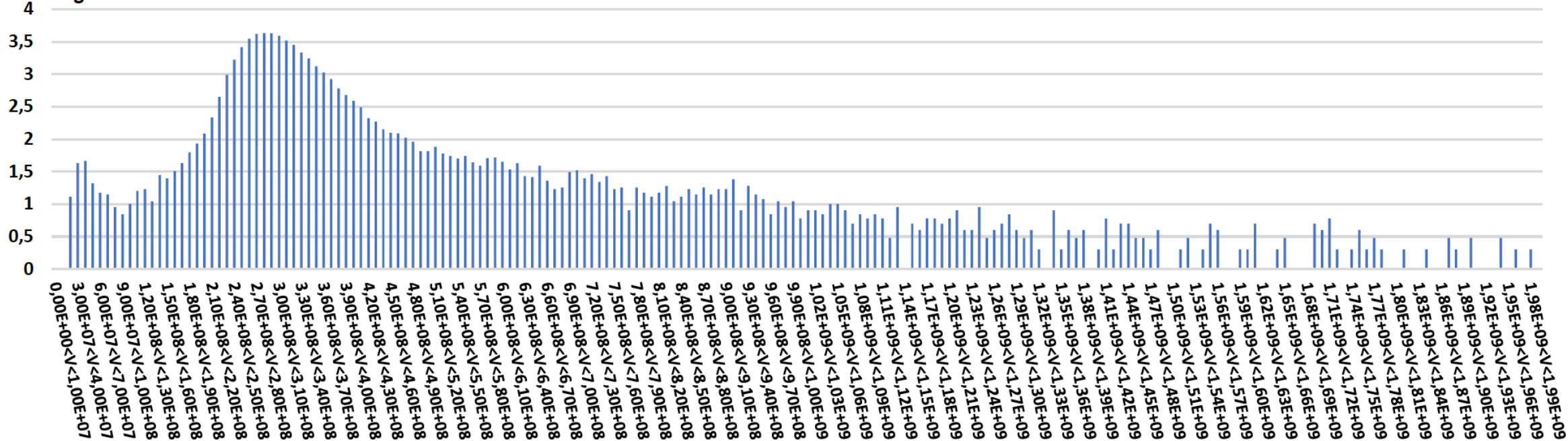
Events

[19] - LODI-01-2017/01/25-00060; Distribution of events according to the azimuthal and zenithal angles ϕ, θ . All events (21815 V>C). Maximum number of events for each direction identified by the pair $\theta; \phi$. Average 6,5

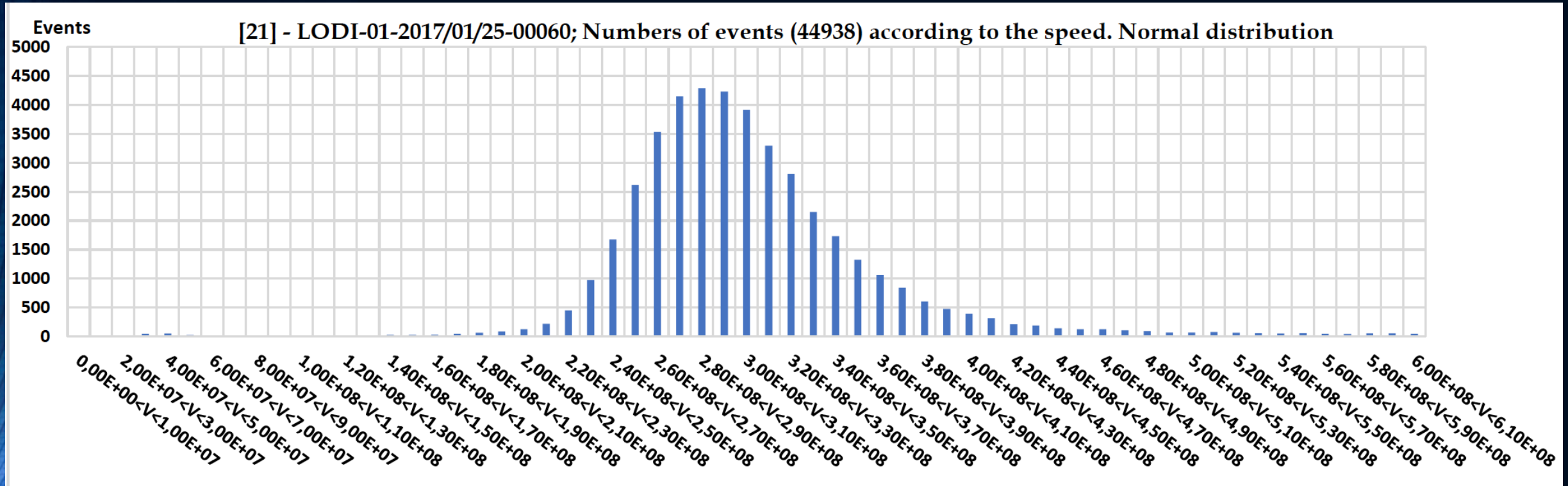


Events - Logaritmik scale

[20] - LODI-01-2017/01/25-00060; Numbers of events (44938) according to the speed - Logaritmik scale



Osservazioni sulla velocità



CONCLUSIONI



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GRAZIE DELL'ATTENZIONE

- Tutor: Professor Abele Bianchi, Vittoria Elvezia Gianolli (UNIMIB), Sara Anzuinelli (UNIMIB).
- Docente referente: Prof.ssa Giulia Fiorentini.

