铁和镍能谱的进展

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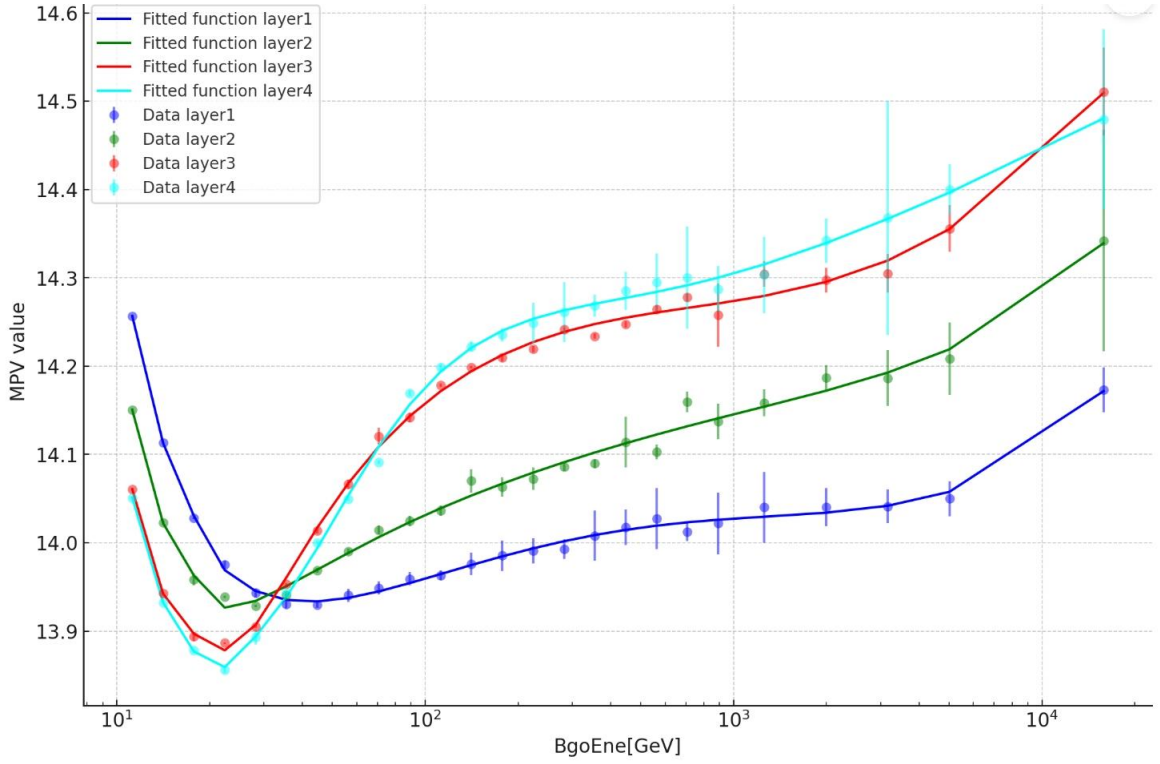
预筛选

- SAA区排除
- BgoEne>100
- 高能触发
- STK机器学习径迹（STK）
- PSD和BGO的几何Cut
- Psd 穿过能量最大层
- BGO MaxLayerRatio < 0.35

Psd每一层电荷

$$\mathrm{accfunc}(x) = p_0 + \frac{p_1}{\log_{10}(x/10)} + \frac{p_2}{(\log_{10}(x/10))^2} + \frac{p_3}{(\log_{10}(x/10))^4} + p_4 \log_{10}(x/10) + p_5(\log_{10}(x/10))^2 + p_6(\log_{10}(x/10))^4 + \frac{p_7}{x} + \frac{p_8}{x^2} + \frac{p_9}{x^4}$$

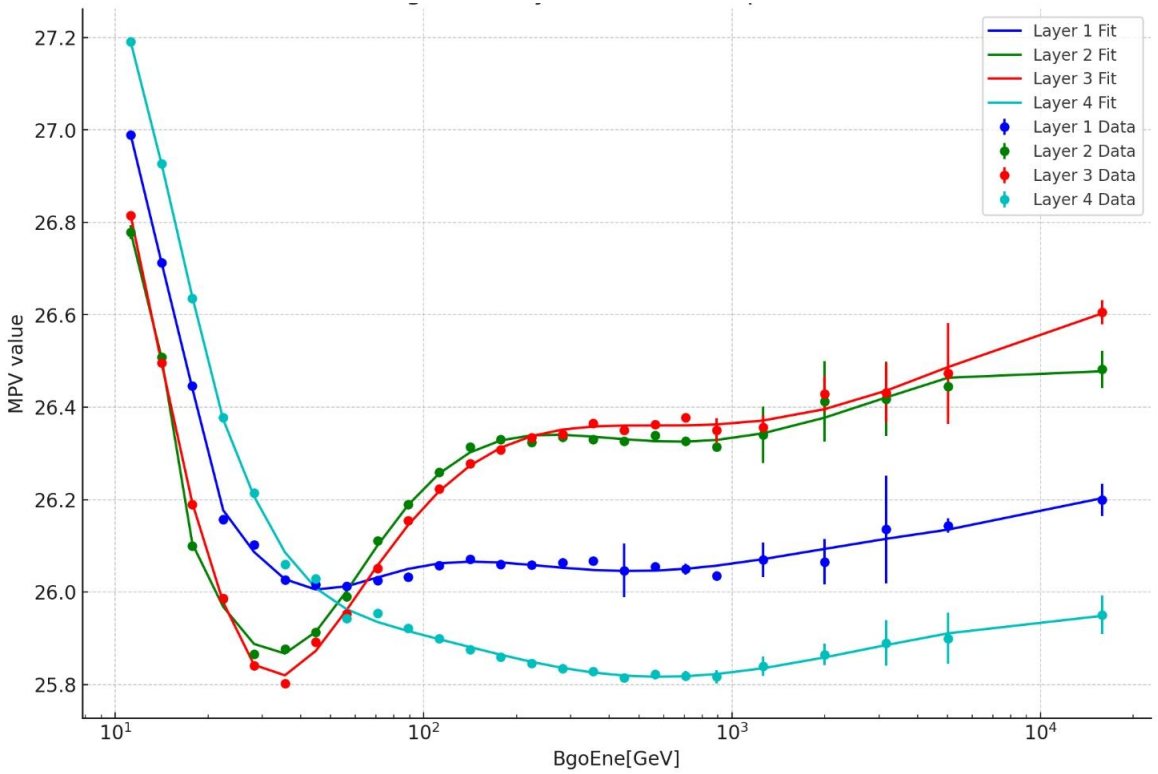


	p0	p1	p2	p3	p4	p5	\
Layer 1	8.046865	4.481212	-0.228970	0.000206	3.231399	-0.711494	
Layer 2	6.776058	5.880623	-0.302758	0.000275	3.621692	-0.712484	
Layer 3	21.566412	-6.458706	0.300827	-0.000245	-3.085044	0.482806	
Layer 4	-6.313381	19.260633	-0.941604	0.000811	8.277594	-1.275296	

	p6	p7	p8	p9
Layer 1	0.016184	-77.666022	-976.531753	-163864.651480
Layer 2	0.014004	-111.510948	-1288.002386	-207908.487603
Layer 3	-0.001407	121.401278	1366.200286	300870.721615
Layer 4	0.013982	-451.145687	-3264.827444	-828998.890713

Psd每一层电荷

$$\text{accfunc}(x) = p_0 + \frac{p_1}{\log_{10}(x/10)} + \frac{p_2}{(\log_{10}(x/10))^2} + \frac{p_3}{(\log_{10}(x/10))^4} + p_4 \log_{10}(x/10) + p_5(\log_{10}(x/10))^2 + p_6(\log_{10}(x/10))^4 + \frac{p_7}{x} + \frac{p_8}{x^2} + \frac{p_9}{x^4}$$



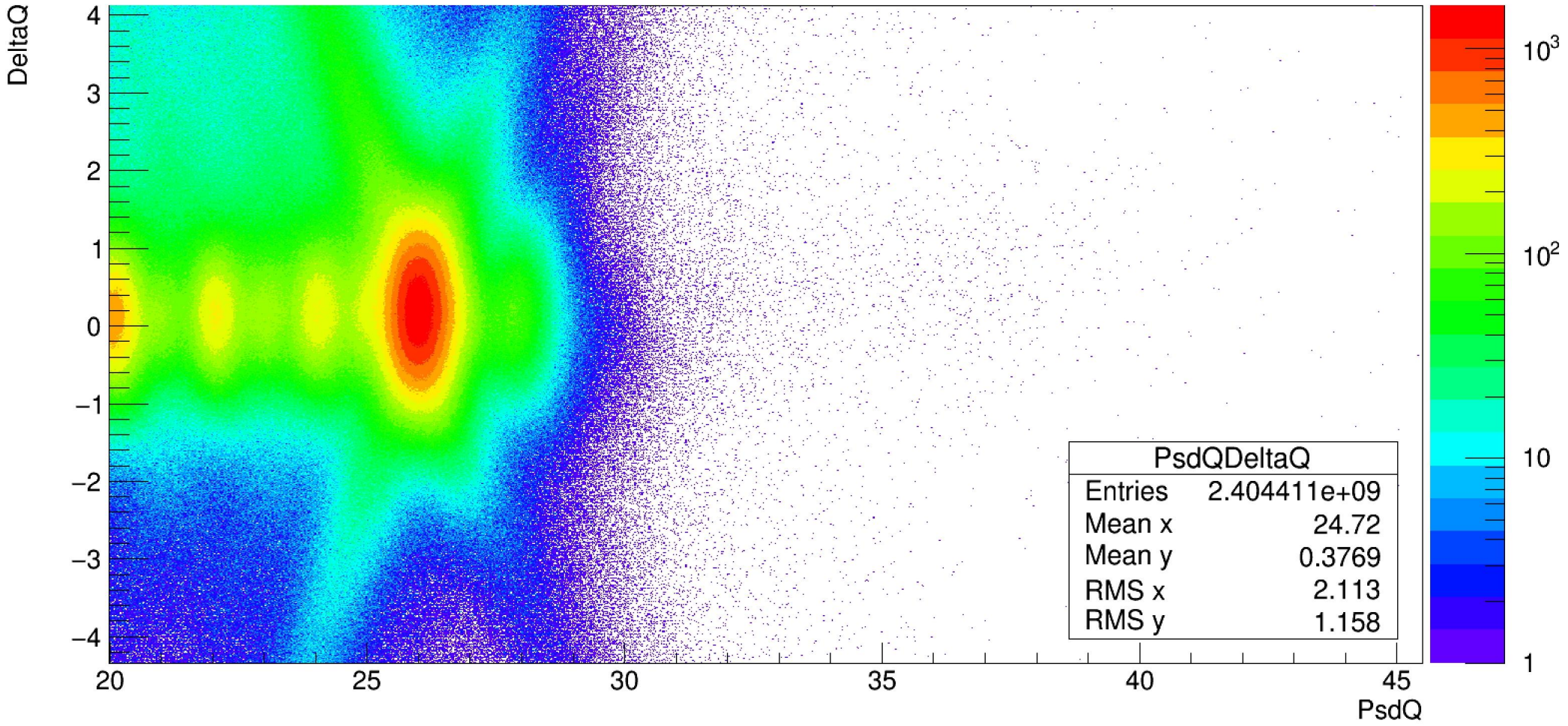
	p0	p1	p2 \
Layer 1	-4.11e+01 ± 3.07e+01	6.05e+01 ± 2.70e+01	-2.99e+00 ± 1.33e+00
Layer 2	1.89e-01 ± 3.10e+01	2.82e+01 ± 2.72e+01	-1.29e+00 ± 1.34e+00
Layer 3	4.03e+01 ± 2.95e+01	-8.83e+00 ± 2.59e+01	4.74e-01 ± 1.27e+00
Layer 4	-1.97e+00 ± 5.01e+00	2.60e+01 ± 4.69e+00	-1.28e+00 ± 1.04e+00

	p3	p4	p5 \
Layer 1	2.61e-03 ± 1.15e-03	2.85e+01 ± 1.35e+01	-4.72e+00 ± 2.35e+00
Layer 2	1.03e-03 ± 1.16e-03	8.00e+00 ± 1.36e+01	-6.72e-01 ± 2.37e+00
Layer 3	-4.45e-04 ± 1.10e-03	-8.24e+00 ± 1.30e+01	1.82e+00 ± 2.25e+00
Layer 4	1.11e-03 ± 3.06e-02	1.10e+01 ± 3.32e+00	-1.65e+00 ± 1.38e+00

	p6	p7	p8 \
Layer 1	5.73e-02 ± 3.12e-02	-1.30e+03 ± 5.58e+02	-1.14e+04 ± 5.37e+03
Layer 2	-1.02e-02 ± 3.14e-02	-7.90e+02 ± 5.63e+02	-3.01e+03 ± 5.42e+03
Layer 3	-3.14e-02 ± 2.99e-02	2.71e+01 ± 5.35e+02	3.88e+03 ± 5.16e+03
Layer 4	1.47e-02 ± 1.60e-01	-5.78e+02 ± 2.13e+01	-4.52e+03 ± 6.62e+01

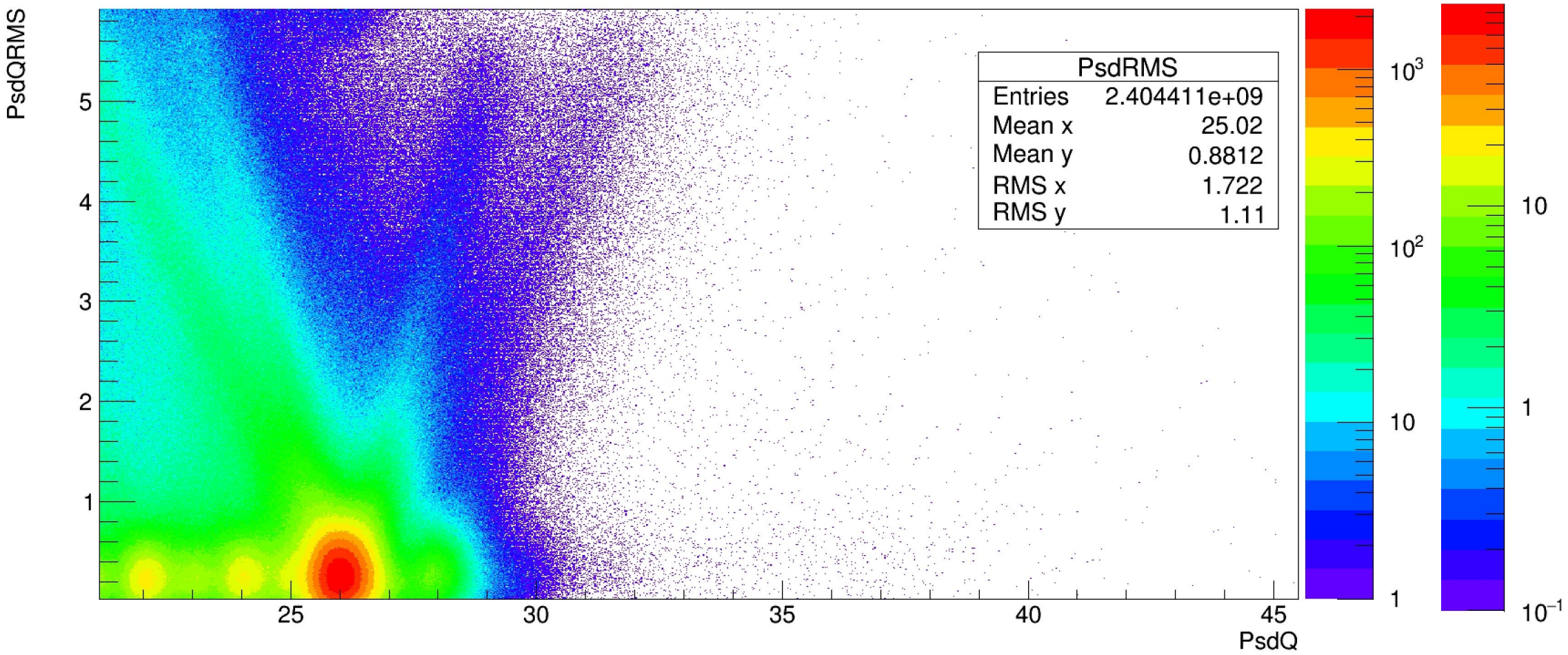
	p9
Layer 1	-2.49e+06 ± 1.12e+06
Layer 2	-1.46e+06 ± 1.13e+06
Layer 3	1.85e+05 ± 1.07e+06
Layer 4	-1.11e+06 ± 9.55e+02

PsdQ-Delta



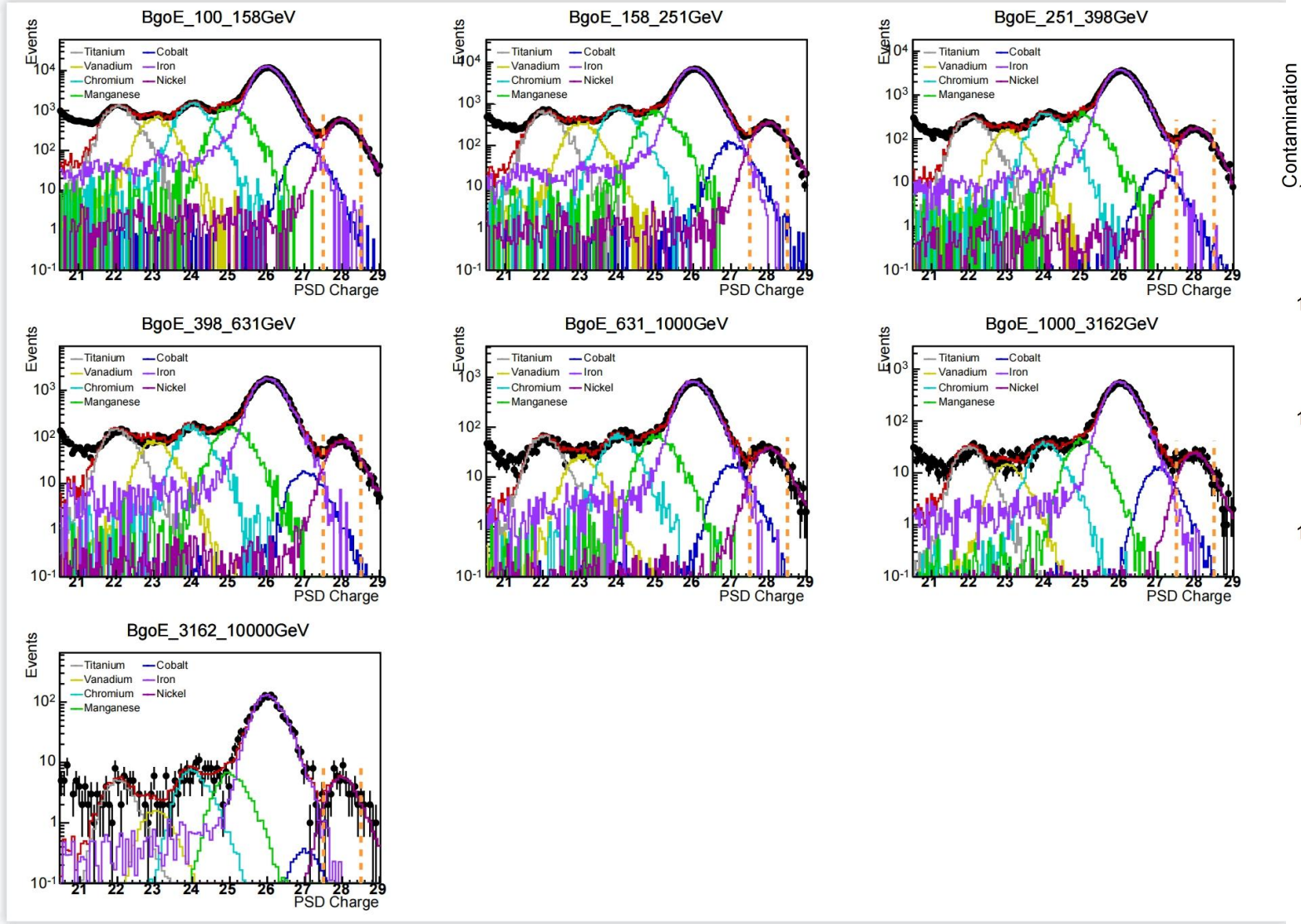
Delta=PsdQLayer1-PsdQLayer2
|Delta|<2.0

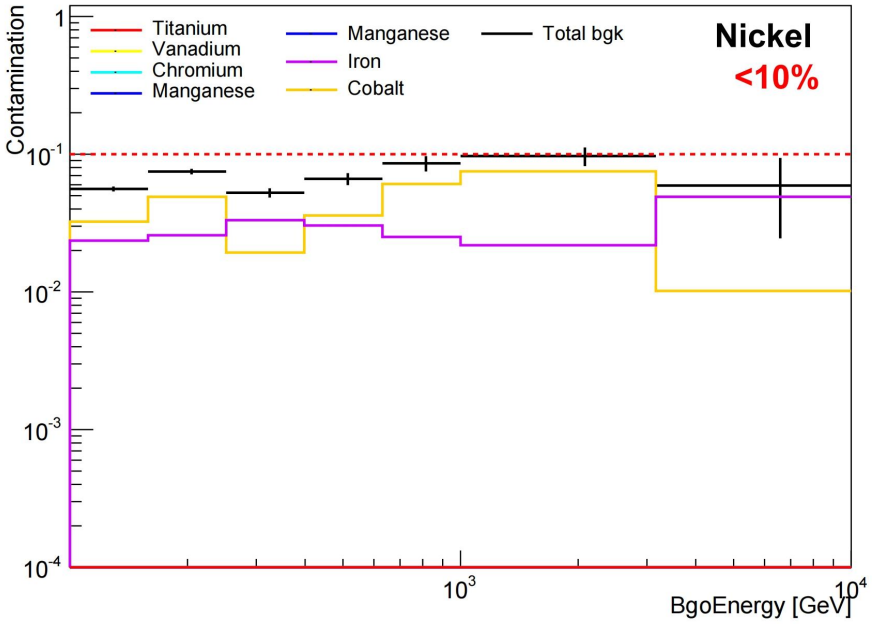
PsdQ-PsdRMS



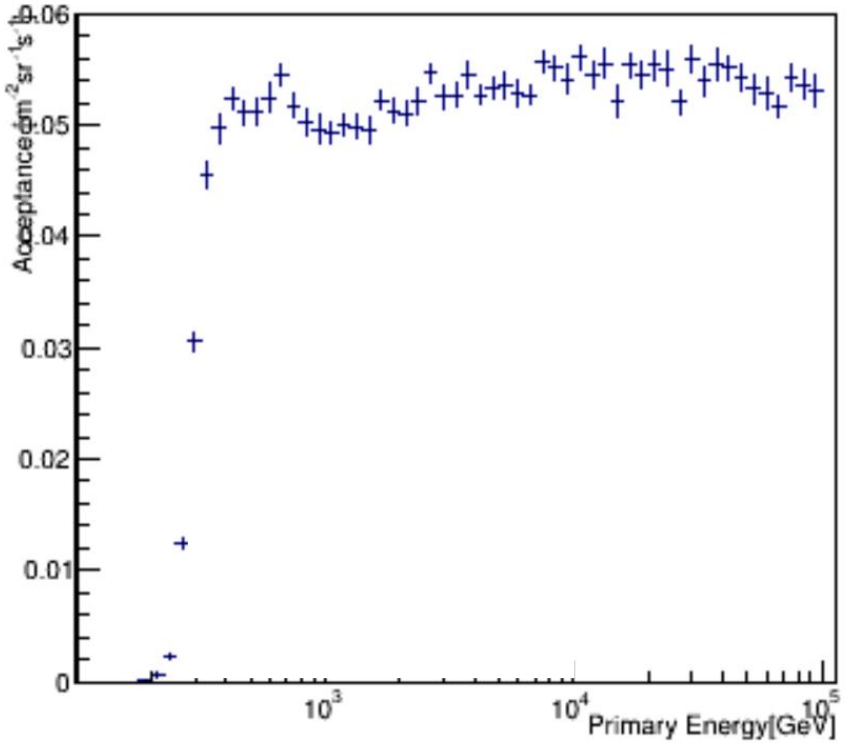
PsdRMS<1

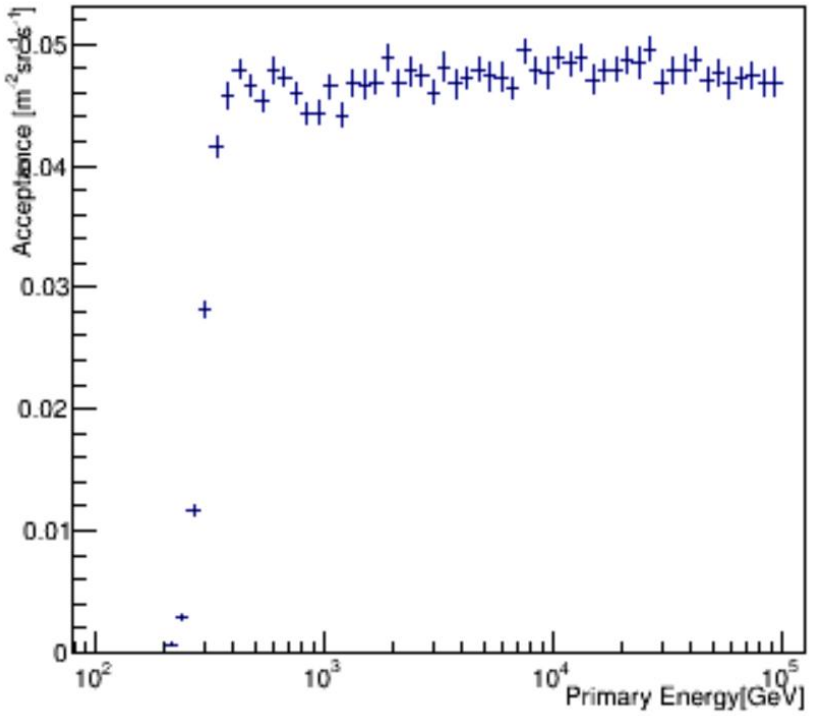
模板拟合


BgoE_100_158GeV
BgoE_158_251GeV
BgoE_251_398GeV
BgoE_398_631GeV
BgoE_631_1000GeV
BgoE_1000_3162GeV
BgoE_3162_10000GeV
Titanium
Vanadium
Chromium
Manganese
Cobalt
Iron
Nickel
Events
PSD Charge


Contamination
Titanium
Vanadium
Chromium
Manganese
Iron
Cobalt
Total bgk
Nickel
<10%
BgoEnergy [GeV]

接受度



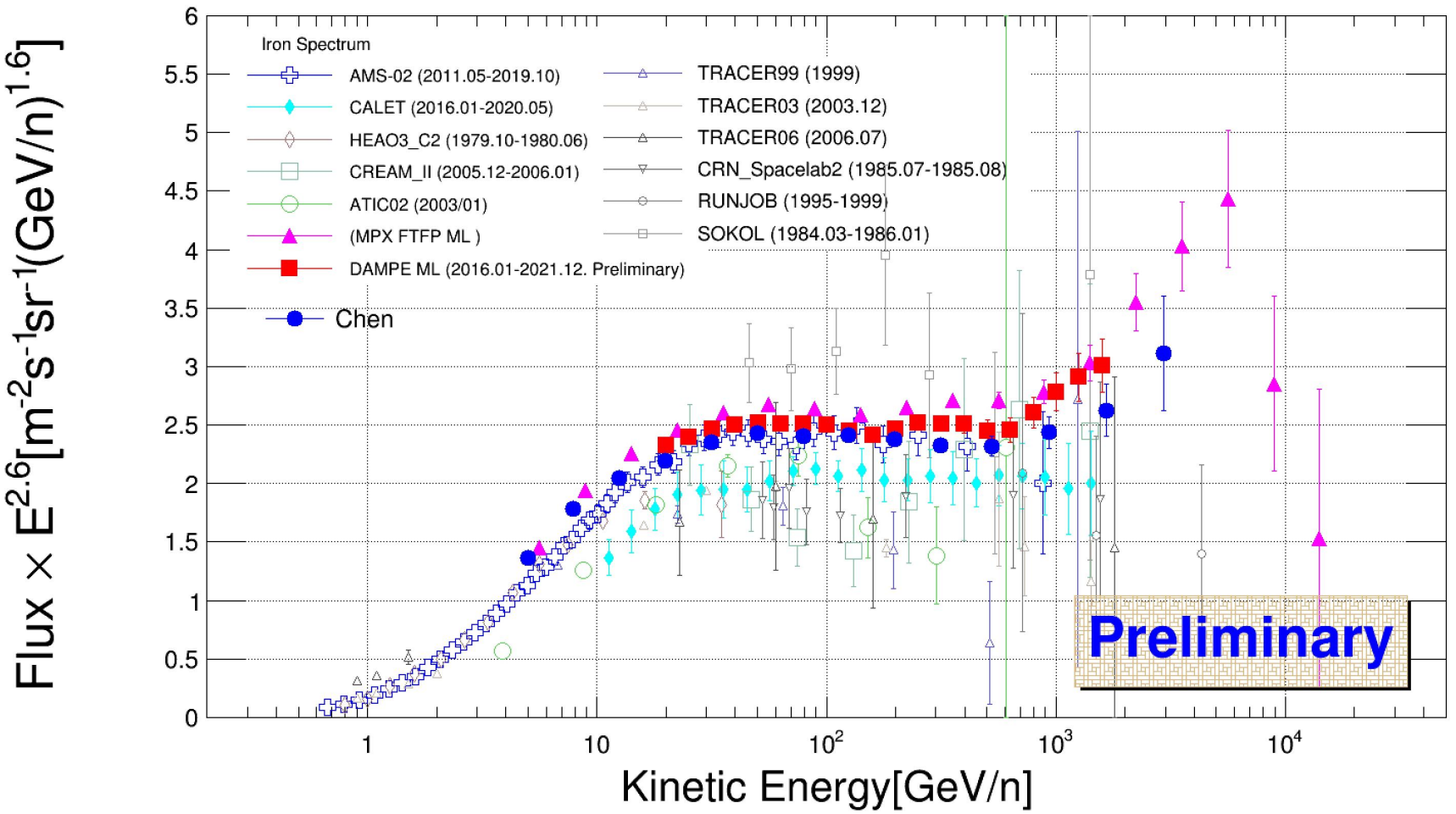


PsdHits=3

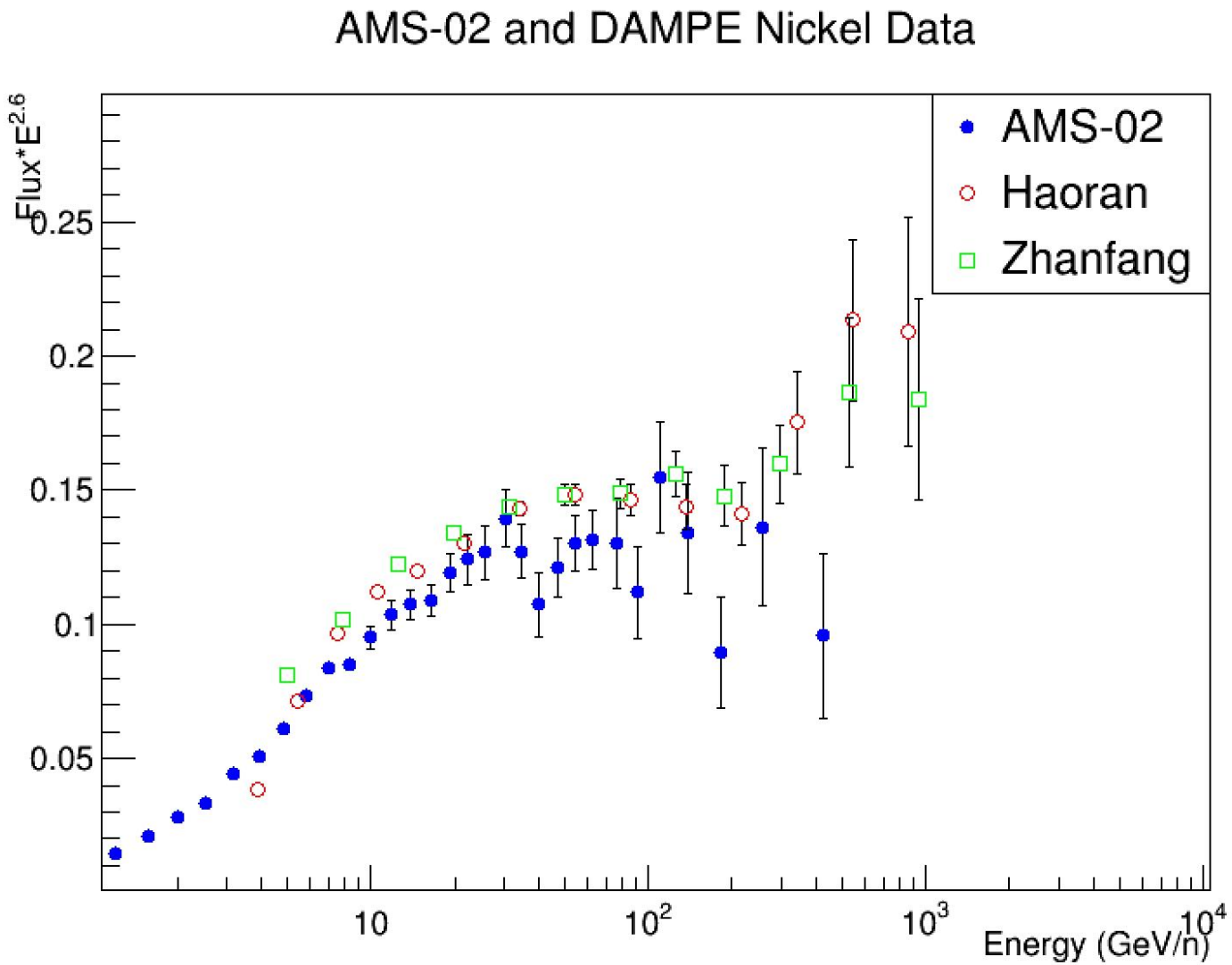
PsdQ：铁：25.5-26.5 镍：27.6-28.4

|PsdQLayer1-PsdQLayer2|<2.0

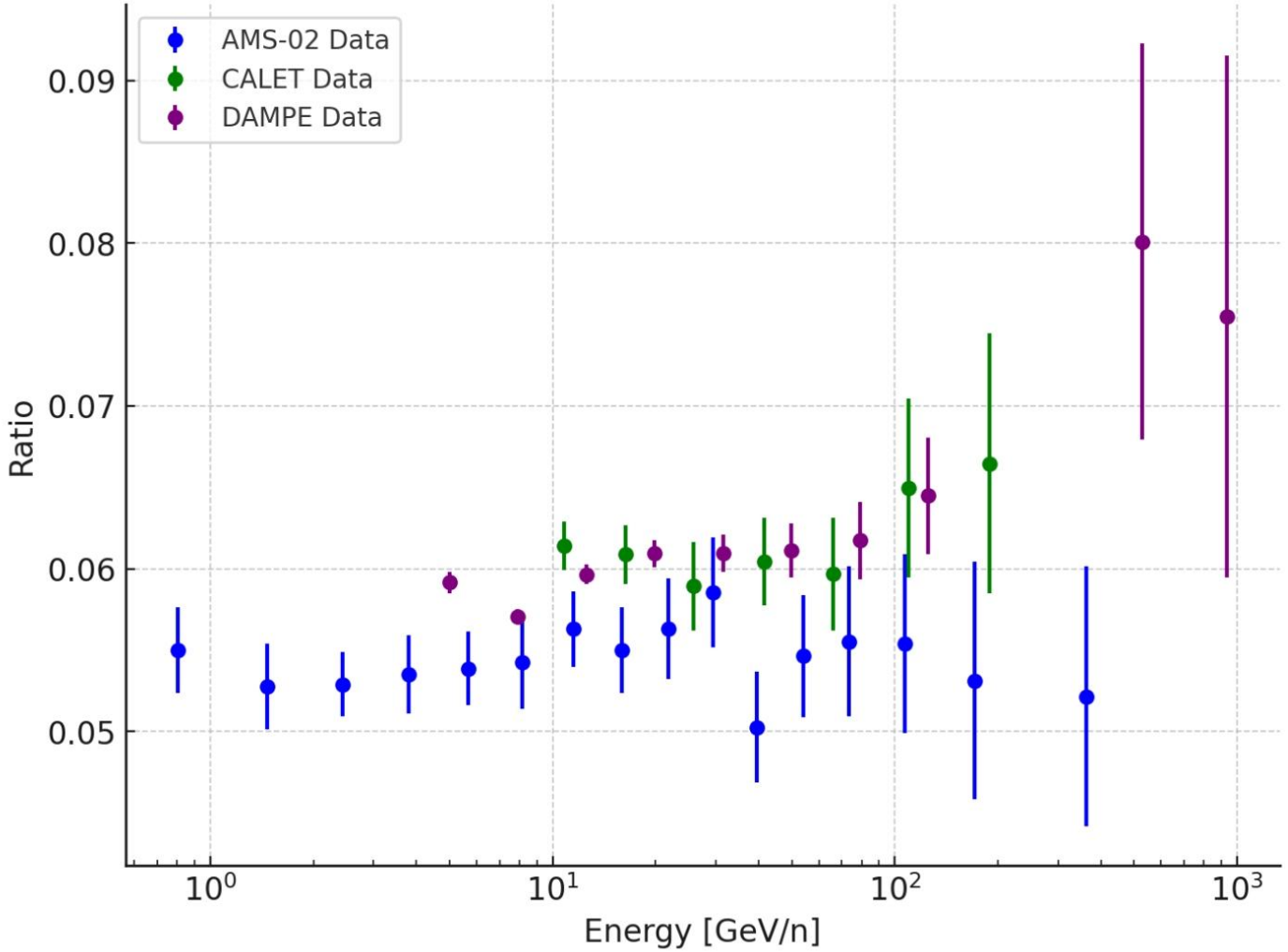
铁的能谱


Iron Spectrum
AMS-02 (2011.05-2019.10)
CALET (2016.01-2020.05)
HEAO3_C2 (1979.10-1980.06)
CREAM_II (2005.12-2006.01)
ATIC02 (2003/01)
(MPX FTFP ML)
DAMPE ML (2016.01-2021.12. Preliminary)
Chen
TRACER99 (1999)
TRACER03 (2003.12)
TRACER06 (2006.07)
CRN_Spacelab2 (1985.07-1985.08)
RUNJOB (1995-1999)
SOKOL (1984.03-1986.01)
Preliminary
Flux × E^2.6[m^-2s^-1sr^-1(GeV/n)^1.6]
Kinetic Energy[GeV/n]

镍的能谱


AMS-02 and DAMPE Nickel Data
Flux*E^2.6
0.25
0.2
0.15
0.1
0.05
10
10^2
10^3
10^4
Energy (GeV/n)
AMS-02
Haoran
Zhanfang

Ni/Fe


AMS-02 Data
CALET Data
DAMPE Data
Ratio
0.09
0.08
0.07
0.06
0.05
10^0
10^1
10^2
10^3
Energy [GeV/n]