Properties of Cosmic-Ray Sulfur and Determination of the Composition of Primary Cosmic-Ray Carbon, Neon, Magnesium, and Sulfur: Ten-Year Results from the Alpha Magnetic Spectrometer - SUPPLEMENTAL MATERIAL -

(AMS Collaboration)

For references see the main text.

Detector.— AMS is a general purpose high energy particle physics detector in space. The layout of the detector is shown in Fig. S1. The key elements are the permanent magnet, the silicon tracker, four planes of time of flight (TOF) scintillation counters, the array of anticoincidence counters (ACCs), the transition radiation detector (TRD), the ring imaging Čerenkov detector (RICH), and the electromagnetic calorimeter (ECAL).

The AMS coordinate system is concentric with the magnet. The x axis is parallel to the main component of the magnetic field and the z axis points vertically with $z = 0$ at the center of the magnet. The (y-z) plane is the bending plane.

The central field of the magnet is 1.4 kG. Before flight, the field was measured in 120 000 locations to an accuracy of better than 2 G.

The tracker has nine layers, the first ($L1$) at the top of the detector, the second ($L2$) just above the magnet, six ($L3$ to $L8$) within the bore of the magnet, and the last ($L9$) just above the ECAL. $L2$ to $L8$ constitute the inner tracker. Each layer contains double-sided silicon microstrip detectors, which independently measure the x and y coordinates. The tracker accurately determines the trajectory of cosmic rays by multiple measurements of the coordinates with a resolution in each layer of 6.2 μm for S nuclei in the bending (y) direction, see Fig. S2. Together, the tracker and the magnet measure the rigidity R of charged cosmic rays, with a maximum detectable rigidity of 3.3 TV for S nuclei over the 3 m lever arm from $L1$ to $L9$. Each layer of the tracker provides an independent measurement of the charge Z with a resolution of $\sigma_Z/Z = 2.9\%$ for S nuclei. Overall, the inner tracker has a resolution of $\sigma_Z/Z = 1.1\%$.

As seen from Fig. S1, two of the TOF planes are located above the magnet (upper TOF) and two planes are below the magnet (lower TOF). The overall velocity ($\beta = v/c$) resolution has been measured to be $\sigma(1/\beta) = 0.01$ for S nuclei. This discriminates between upward- and downward-going particles. The pulse heights of the two upper planes are combined to provide an independent measurement of the charge with an accuracy $\sigma_Z/Z =2\%$. The pulse heights from the two lower planes are combined to provide another independent charge measurement with the same accuracy.

Sulfur nuclei traversing AMS were triggered as described in Ref. [23]. The trigger efficiency has been measured to be >94% with the uncertainty $< 1\%$ over the entire rigidity range.

Monte Carlo (MC) simulated events were produced using a dedicated program developed by the collaboration based on the GEANT4-10.3 package [24]. The program simulates electromagnetic and hadronic [25] interactions of particles in the material of AMS and generates detector responses. The digitization of the signals is simulated precisely according to the measured characteristics of the electronics. The simulated events then undergo the same reconstruction as used for the data.

Event Selection.— In the first 10 years AMS has collected 1.8×10^{11} cosmic ray events. The collection time used in this analysis includes only those seconds during which the detector was in normal operating conditions and, in addition, AMS was pointing within 40° of the local zenith and the International Space Station was outside of the South Atlantic Anomaly. Due to the geomagnetic field, this collection time increases with rigidity, reaching 2.2×10^8 s above 30 GV.

Sulfur nuclei are required to be downward going and to have a reconstructed track in the inner tracker which passes through $L1$. In the highest rigidity region, $R \geq 1.2$ TV, the track is also required to pass through $L9$. Track fitting quality criteria such as a χ^2/d.o.f. < 10 in the bending coordinate are applied.

Charge measurements on $L1$, the upper TOF, the inner tracker, and, for $R > 1.2$ TV, the lower TOF and $L9$ are required to be compatible with charge $Z = 16$.

The measured rigidity is required to be greater than a factor of 1.2 times the maximum geomagnetic cutoff within the AMS field of view. The cutoff was calculated by backtracing [26] from the top of AMS out to 50 Earth's radii using the most recent International Geomagnetic Reference Field model [27].

TABLE SI: The sulfur flux Φ_S as a function of rigidity at the top of AMS in units of $[m^2 \cdot sr \cdot s \cdot GV]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_S	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(4.047	0.054	0.198	0.581	0.020	0.614)	$\times 10^{-2}$
2.40 – 2.67	(3.867	0.044	0.181	0.331	0.012	0.377)	$\times 10^{-2}$
2.67 – 2.97	(3.826	0.038	0.174	0.176	0.006	0.248)	$\times 10^{-2}$
2.97 – 3.29	(3.543	0.033	0.157	0.085	0.003	0.179)	$\times 10^{-2}$
3.29 – 3.64	(3.176	0.028	0.138	0.044	0.000	0.145)	$\times 10^{-2}$
3.64 – 4.02	(2.796	0.024	0.120	0.028	0.001	0.124)	$\times 10^{-2}$
4.02 – 4.43	(2.328	0.020	0.099	0.020	0.002	0.101)	$\times 10^{-2}$
4.43 – 4.88	(2.011	0.016	0.085	0.015	0.003	0.087)	$\times 10^{-2}$
4.88 – 5.37	(1.677	0.013	0.071	0.011	0.003	0.072)	$\times 10^{-2}$
5.37 – 5.90	(1.392	0.011	0.059	0.008	0.003	0.059)	$\times 10^{-2}$
5.90 – 6.47	(1.187	0.009	0.050	0.006	0.002	0.051)	$\times 10^{-2}$
6.47 – 7.09	(9.825	0.074	0.415	0.048	0.022	0.418)	$\times 10^{-3}$
7.09 – 7.76	(8.096	0.061	0.342	0.037	0.020	0.344)	$\times 10^{-3}$
7.76 – 8.48	(6.771	0.051	0.286	0.029	0.017	0.288)	$\times 10^{-3}$
8.48 – 9.26	(5.583	0.043	0.236	0.023	0.015	0.238)	$\times 10^{-3}$
9.26 – 10.1	(4.626	0.036	0.196	0.019	0.013	0.197)	$\times 10^{-3}$
10.1 – 11.0	(3.828	0.031	0.162	0.015	0.011	0.163)	$\times 10^{-3}$
11.0 – 12.0	(3.109	0.027	0.132	0.012	0.009	0.132)	$\times 10^{-3}$
12.0 – 13.0	(2.555	0.024	0.108	0.009	0.008	0.109)	$\times 10^{-3}$
13.0 – 14.1	(2.075	0.020	0.088	0.007	0.007	0.088)	$\times 10^{-3}$
14.1 – 15.3	(1.723	0.017	0.073	0.006	0.006	0.073)	$\times 10^{-3}$
15.3 – 16.6	(1.413	0.015	0.060	0.005	0.005	0.060)	$\times 10^{-3}$
16.6 – 18.0	(1.121	0.012	0.047	0.004	0.004	0.048)	$\times 10^{-3}$
18.0 – 19.5	(9.307	0.106	0.394	0.030	0.033	0.396)	$\times 10^{-4}$
19.5 – 21.1	(7.687	0.090	0.325	0.025	0.027	0.327)	$\times 10^{-4}$
21.1 – 22.8	(6.122	0.074	0.259	0.020	0.022	0.261)	$\times 10^{-4}$
22.8 – 24.7	(5.086	0.061	0.215	0.016	0.019	0.217)	$\times 10^{-4}$
24.7 – 26.7	(4.235	0.052	0.179	0.013	0.016	0.181)	$\times 10^{-4}$
26.7 – 28.8	(3.462	0.044	0.147	0.011	0.013	0.148)	$\times 10^{-4}$
28.8 – 33.5	(2.544	0.025	0.108	0.008	0.010	0.109)	$\times 10^{-4}$
33.5 – 38.9	(1.741	0.019	0.074	0.005	0.007	0.075)	$\times 10^{-4}$
38.9 – 45.1	(1.211	0.014	0.052	0.004	0.005	0.052)	$\times 10^{-4}$
45.1 – 52.2	(8.037	0.110	0.344	0.026	0.034	0.346)	$\times 10^{-5}$
52.2 – 60.3	(5.350	0.084	0.230	0.017	0.023	0.231)	$\times 10^{-5}$
60.3 – 69.7	(3.673	0.065	0.158	0.012	0.017	0.160)	$\times 10^{-5}$
69.7 – 80.5	(2.468	0.050	0.107	0.008	0.012	0.108)	$\times 10^{-5}$
80.5 – 93.0	(1.635	0.037	0.071	0.006	0.008	0.072)	$\times 10^{-5}$

Table continued

TABLE SI – *(Continued).*

Rigidity [GV]	Φ_S	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
93.0 – 108	(1.122	0.028	0.049	0.004	0.006	0.049)	$\times 10^{-5}$
108 – 125	(7.496	0.217	0.328	0.028	0.044	0.333)	$\times 10^{-6}$
125 – 147	(4.929	0.155	0.217	0.019	0.031	0.220)	$\times 10^{-6}$
147 – 175	(3.071	0.108	0.136	0.013	0.021	0.138)	$\times 10^{-6}$
175 – 211	(1.886	0.074	0.084	0.009	0.015	0.086)	$\times 10^{-6}$
211 – 259	(1.140	0.050	0.051	0.007	0.010	0.053)	$\times 10^{-6}$
259 – 330	(6.417	0.305	0.293	0.048	0.069	0.305)	$\times 10^{-7}$
330 – 441	(2.649	0.158	0.123	0.028	0.036	0.131)	$\times 10^{-7}$
441 – 660	(1.116	0.074	0.053	0.019	0.021	0.060)	$\times 10^{-7}$
660 – 1200	(2.944	0.232	0.146	0.112	0.099	0.209)	$\times 10^{-8}$
1200 – 3000	(5.130	1.407	0.319	0.143	0.291	0.455)	$\times 10^{-9}$

TABLE SII: The O flux Φ_O as a function of rigidity at the top of AMS in units of $[\mathrm{m}^2 \cdot \mathrm{sr} \cdot \mathrm{s} \cdot \mathrm{GV}]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error. Note, this Table has 48 bins. Table SVIII shows the same O flux in different binning (66 bins). Please see text for details.

Rigidity [GV]	Φ_O	$\sigma_{\text{stat.}}$	$\sigma_{\text{acc.}}$	$\sigma_{\text{unf.}}$	σ_{scale}	$\sigma_{\text{syst.}}$	
2.15 – 2.40	(1.658	0.003	0.052	0.020	0.008	0.057)	$\times 10^{0}$
2.40 – 2.67	(1.524	0.002	0.046	0.015	0.005	0.049)	$\times 10^{0}$
2.67 – 2.97	(1.375	0.002	0.040	0.012	0.002	0.042)	$\times 10^{0}$
2.97 – 3.29	(1.215	0.002	0.034	0.009	0.001	0.035)	$\times 10^{0}$
3.29 – 3.64	(1.057	0.001	0.029	0.007	0.000	0.030)	$\times 10^{0}$
3.64 – 4.02	(9.097	0.012	0.248	0.048	0.005	0.253)	$\times 10^{-1}$
4.02 – 4.43	(7.730	0.010	0.209	0.035	0.007	0.212)	$\times 10^{-1}$
4.43 – 4.88	(6.546	0.008	0.176	0.025	0.008	0.178)	$\times 10^{-1}$
4.88 – 5.37	(5.493	0.007	0.147	0.018	0.009	0.148)	$\times 10^{-1}$
5.37 – 5.90	(4.578	0.006	0.122	0.013	0.009	0.123)	$\times 10^{-1}$
5.90 – 6.47	(3.809	0.005	0.101	0.010	0.008	0.102)	$\times 10^{-1}$
6.47 – 7.09	(3.153	0.004	0.084	0.007	0.007	0.085)	$\times 10^{-1}$
7.09 – 7.76	(2.591	0.003	0.069	0.006	0.006	0.070)	$\times 10^{-1}$
7.76 – 8.48	(2.134	0.003	0.057	0.004	0.005	0.057)	$\times 10^{-1}$
8.48 – 9.26	(1.752	0.002	0.047	0.003	0.005	0.047)	$\times 10^{-1}$
9.26 – 10.1	(1.434	0.002	0.038	0.003	0.004	0.039)	$\times 10^{-1}$
10.1 – 11.0	(1.173	0.002	0.031	0.002	0.003	0.032)	$\times 10^{-1}$
11.0 – 12.0	(9.600	0.013	0.257	0.018	0.029	0.260)	$\times 10^{-2}$
12.0 – 13.0	(7.874	0.012	0.211	0.015	0.024	0.213)	$\times 10^{-2}$
13.0 – 14.1	(6.465	0.010	0.174	0.013	0.021	0.175)	$\times 10^{-2}$
14.1 – 15.3	(5.302	0.009	0.143	0.011	0.017	0.144)	$\times 10^{-2}$
15.3 – 16.6	(4.356	0.007	0.117	0.009	0.015	0.119)	$\times 10^{-2}$
16.6 – 18.0	(3.562	0.006	0.096	0.008	0.012	0.097)	$\times 10^{-2}$
18.0 – 19.5	(2.929	0.005	0.079	0.007	0.010	0.080)	$\times 10^{-2}$
19.5 – 21.1	(2.403	0.004	0.065	0.006	0.009	0.066)	$\times 10^{-2}$
21.1 – 22.8	(1.975	0.004	0.054	0.005	0.007	0.054)	$\times 10^{-2}$
22.8 – 24.7	(1.611	0.003	0.044	0.004	0.006	0.044)	$\times 10^{-2}$
24.7 – 26.7	(1.316	0.003	0.036	0.004	0.005	0.036)	$\times 10^{-2}$
26.7 – 28.8	(1.078	0.002	0.029	0.003	0.004	0.030)	$\times 10^{-2}$
28.8 – 33.5	(8.107	0.012	0.222	0.026	0.031	0.225)	$\times 10^{-3}$
33.5 – 38.9	(5.477	0.009	0.151	0.019	0.022	0.153)	$\times 10^{-3}$
38.9 – 45.1	(3.692	0.007	0.102	0.014	0.015	0.104)	$\times 10^{-3}$
45.1 – 52.2	(2.518	0.005	0.070	0.010	0.011	0.072)	$\times 10^{-3}$
52.2 – 60.3	(1.712	0.004	0.048	0.008	0.007	0.049)	$\times 10^{-3}$
60.3 – 69.7	(1.158	0.003	0.033	0.005	0.005	0.034)	$\times 10^{-3}$
69.7 – 80.5	(7.799	0.024	0.223	0.039	0.037	0.229)	$\times 10^{-4}$

Table continued

TABLE SII – *(Continued)*.

Rigidity [GV]	Φ_{O}	$\sigma_{\mathrm{stat.}}$	$\sigma_{\mathrm{acc.}}$	$\sigma_{\mathrm{unf.}}$	σ_{scale}	$\sigma_{\mathrm{syst.}}$	
80.5 – 93.0	(5.298	0.019	0.153	0.027	0.026	0.158)	$\times 10^{-4}$
93.0 – 108	(3.556	0.014	0.104	0.019	0.019	0.107)	$\times 10^{-4}$
108 – 125	(2.390	0.011	0.071	0.013	0.013	0.073)	$\times 10^{-4}$
125 – 147	(1.571	0.008	0.047	0.009	0.009	0.049)	$\times 10^{-4}$
147 – 175	(9.878	0.053	0.300	0.060	0.064	0.313)	$\times 10^{-5}$
175 – 211	(6.145	0.037	0.190	0.041	0.045	0.200)	$\times 10^{-5}$
211 – 259	(3.624	0.025	0.114	0.027	0.031	0.122)	$\times 10^{-5}$
259 – 330	(1.996	0.015	0.065	0.018	0.021	0.070)	$\times 10^{-5}$
330 – 441	(9.834	0.083	0.329	0.120	0.134	0.375)	$\times 10^{-6}$
441 – 660	(3.884	0.037	0.136	0.071	0.079	0.173)	$\times 10^{-6}$
660 – 1200	(1.086	0.012	0.041	0.036	0.039	0.067)	$\times 10^{-6}$
1200 – 3000	(1.502	0.061	0.072	0.052	0.076	0.117)	$\times 10^{-7}$

TABLE SIII: The Ne flux Φ_{Ne} as a function of rigidity at the top of AMS in units of $[m^2 \cdot sr \cdot s \cdot GV]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_{Ne}	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(2.552	0.012	0.101	0.056	0.012	0.117)	$\times10^{-1}$
2.40 – 2.67	(2.364	0.010	0.090	0.031	0.007	0.096)	$\times10^{-1}$
2.67 – 2.97	(2.130	0.009	0.079	0.020	0.004	0.082)	$\times10^{-1}$
2.97 – 3.29	(1.910	0.007	0.069	0.016	0.001	0.071)	$\times10^{-1}$
3.29 – 3.64	(1.691	0.006	0.060	0.012	0.000	0.062)	$\times10^{-1}$
3.64 – 4.02	(1.461	0.005	0.052	0.010	0.001	0.052)	$\times10^{-1}$
4.02 – 4.43	(1.248	0.004	0.044	0.007	0.001	0.044)	$\times10^{-1}$
4.43 – 4.88	(1.079	0.004	0.037	0.006	0.001	0.038)	$\times10^{-1}$
4.88 – 5.37	(9.127	0.029	0.315	0.042	0.015	0.318)	$\times10^{-2}$
5.37 – 5.90	(7.700	0.024	0.265	0.032	0.014	0.267)	$\times10^{-2}$
5.90 – 6.47	(6.485	0.020	0.223	0.024	0.013	0.224)	$\times10^{-2}$
6.47 – 7.09	(5.388	0.017	0.185	0.018	0.012	0.186)	$\times10^{-2}$
7.09 – 7.76	(4.431	0.014	0.152	0.013	0.011	0.153)	$\times10^{-2}$
7.76 – 8.48	(3.683	0.011	0.126	0.010	0.009	0.127)	$\times10^{-2}$
8.48 – 9.26	(3.054	0.010	0.105	0.008	0.008	0.105)	$\times10^{-2}$
9.26 – 10.1	(2.483	0.008	0.085	0.006	0.007	0.085)	$\times10^{-2}$
10.1 – 11.0	(2.034	0.007	0.070	0.005	0.006	0.070)	$\times10^{-2}$
11.0 – 12.0	(1.665	0.006	0.057	0.004	0.005	0.057)	$\times10^{-2}$
12.0 – 13.0	(1.354	0.005	0.046	0.003	0.004	0.047)	$\times10^{-2}$
13.0 – 14.1	(1.116	0.004	0.038	0.002	0.004	0.038)	$\times10^{-2}$
14.1 – 15.3	(9.138	0.038	0.313	0.020	0.030	0.315)	$\times10^{-3}$
15.3 – 16.6	(7.424	0.032	0.254	0.016	0.025	0.256)	$\times10^{-3}$
16.6 – 18.0	(6.105	0.027	0.209	0.014	0.021	0.211)	$\times10^{-3}$
18.0 – 19.5	(4.991	0.023	0.171	0.012	0.017	0.172)	$\times10^{-3}$
19.5 – 21.1	(4.048	0.019	0.139	0.010	0.014	0.140)	$\times10^{-3}$
21.1 – 22.8	(3.323	0.016	0.114	0.009	0.012	0.115)	$\times10^{-3}$
22.8 – 24.7	(2.741	0.013	0.094	0.008	0.010	0.095)	$\times10^{-3}$
24.7 – 26.7	(2.224	0.011	0.076	0.007	0.008	0.077)	$\times10^{-3}$
26.7 – 28.8	(1.829	0.010	0.063	0.006	0.007	0.063)	$\times10^{-3}$
28.8 – 33.5	(1.344	0.005	0.046	0.005	0.005	0.047)	$\times10^{-3}$
33.5 – 38.9	(9.122	0.040	0.314	0.035	0.036	0.318)	$\times10^{-4}$
38.9 – 45.1	(6.206	0.030	0.214	0.026	0.025	0.217)	$\times10^{-4}$
45.1 – 52.2	(4.156	0.023	0.143	0.019	0.018	0.146)	$\times10^{-4}$
52.2 – 60.3	(2.841	0.018	0.098	0.014	0.012	0.100)	$\times10^{-4}$
60.3 – 69.7	(1.897	0.014	0.066	0.010	0.009	0.067)	$\times10^{-4}$
69.7 – 80.5	(1.286	0.010	0.044	0.007	0.006	0.045)	$\times10^{-4}$
80.5 – 93.0	(8.704	0.080	0.301	0.050	0.045	0.309)	$\times10^{-5}$

Table continued

TABLE SIII – *(Continued)*.

Rigidity [GV]	Φ_{Ne}	$\sigma_{\mathrm{stat.}}$	$\sigma_{\mathrm{acc.}}$	$\sigma_{\mathrm{unf.}}$	σ_{scale}	$\sigma_{\mathrm{syst.}}$
93.0 – 108	(5.684	0.059	0.197	0.033	0.031	0.202) $\times10^{-5}$
108 – 125	(3.820	0.045	0.133	0.022	0.022	0.136) $\times10^{-5}$
125 – 147	(2.545	0.032	0.088	0.015	0.016	0.091) $\times10^{-5}$
147 – 175	(1.549	0.022	0.054	0.009	0.011	0.056) $\times10^{-5}$
175 – 211	(9.602	0.154	0.335	0.058	0.073	0.348) $\times10^{-6}$
211 – 259	(5.737	0.103	0.201	0.037	0.050	0.210) $\times10^{-6}$
259 – 330	(3.092	0.062	0.109	0.023	0.032	0.116) $\times10^{-6}$
330 – 441	(1.506	0.034	0.053	0.014	0.019	0.058) $\times10^{-6}$
441 – 660	(6.026	0.153	0.216	0.081	0.108	0.255) $\times10^{-7}$
660 – 1200	(1.628	0.049	0.060	0.038	0.052	0.088) $\times10^{-7}$
1200 – 3000	(2.753	0.294	0.129	0.047	0.135	0.193) $\times10^{-8}$

TABLE SIV: The Mg flux Φ_{Mg} as a function of rigidity at the top of AMS in units of $[\mathrm{m}^2 \cdot \mathrm{sr} \cdot \mathrm{s} \cdot \mathrm{GV}]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_{Mg}	$\sigma_{\mathrm{stat.}}$	$\sigma_{\mathrm{acc.}}$	$\sigma_{\mathrm{unf.}}$	σ_{scale}	$\sigma_{\mathrm{syst.}}$	
2.15 – 2.40	(3.190	0.014	0.130	0.041	0.015	0.137)	$\times10^{-1}$
2.40 – 2.67	(2.933	0.011	0.115	0.034	0.009	0.120)	$\times10^{-1}$
2.67 – 2.97	(2.623	0.009	0.100	0.027	0.004	0.104)	$\times10^{-1}$
2.97 – 3.29	(2.308	0.008	0.086	0.021	0.002	0.089)	$\times10^{-1}$
3.29 – 3.64	(2.048	0.007	0.075	0.017	0.000	0.077)	$\times10^{-1}$
3.64 – 4.02	(1.776	0.006	0.064	0.013	0.001	0.066)	$\times10^{-1}$
4.02 – 4.43	(1.524	0.005	0.055	0.010	0.001	0.056)	$\times10^{-1}$
4.43 – 4.88	(1.299	0.004	0.046	0.008	0.002	0.047)	$\times10^{-1}$
4.88 – 5.37	(1.101	0.003	0.039	0.006	0.002	0.040)	$\times10^{-1}$
5.37 – 5.90	(9.257	0.026	0.328	0.043	0.017	0.331)	$\times10^{-2}$
5.90 – 6.47	(7.702	0.022	0.272	0.033	0.016	0.275)	$\times10^{-2}$
6.47 – 7.09	(6.407	0.018	0.226	0.025	0.014	0.228)	$\times10^{-2}$
7.09 – 7.76	(5.294	0.015	0.187	0.019	0.013	0.188)	$\times10^{-2}$
7.76 – 8.48	(4.383	0.012	0.155	0.014	0.011	0.156)	$\times10^{-2}$
8.48 – 9.26	(3.605	0.010	0.127	0.011	0.010	0.128)	$\times10^{-2}$
9.26 – 10.1	(2.953	0.009	0.104	0.009	0.008	0.105)	$\times10^{-2}$
10.1 – 11.0	(2.425	0.007	0.085	0.007	0.007	0.086)	$\times10^{-2}$
11.0 – 12.0	(1.970	0.006	0.069	0.005	0.006	0.070)	$\times10^{-2}$
12.0 – 13.0	(1.622	0.006	0.057	0.004	0.005	0.058)	$\times10^{-2}$
13.0 – 14.1	(1.334	0.005	0.047	0.004	0.004	0.047)	$\times10^{-2}$
14.1 – 15.3	(1.100	0.004	0.039	0.003	0.004	0.039)	$\times10^{-2}$
15.3 – 16.6	(8.966	0.035	0.316	0.025	0.030	0.318)	$\times10^{-3}$
16.6 – 18.0	(7.332	0.030	0.258	0.021	0.025	0.260)	$\times10^{-3}$
18.0 – 19.5	(6.012	0.025	0.212	0.017	0.021	0.214)	$\times10^{-3}$
19.5 – 21.1	(4.907	0.021	0.173	0.015	0.017	0.174)	$\times10^{-3}$
21.1 – 22.8	(4.014	0.018	0.141	0.012	0.015	0.143)	$\times10^{-3}$
22.8 – 24.7	(3.253	0.014	0.115	0.011	0.012	0.116)	$\times10^{-3}$
24.7 – 26.7	(2.668	0.012	0.094	0.009	0.010	0.095)	$\times10^{-3}$
26.7 – 28.8	(2.181	0.010	0.077	0.008	0.008	0.078)	$\times10^{-3}$
28.8 – 33.5	(1.638	0.006	0.058	0.006	0.006	0.059)	$\times10^{-3}$
33.5 – 38.9	(1.105	0.004	0.039	0.004	0.004	0.040)	$\times10^{-3}$
38.9 – 45.1	(7.413	0.033	0.263	0.032	0.030	0.267)	$\times10^{-4}$
45.1 – 52.2	(5.011	0.025	0.178	0.023	0.021	0.181)	$\times10^{-4}$
52.2 – 60.3	(3.412	0.020	0.122	0.017	0.015	0.124)	$\times10^{-4}$
60.3 – 69.7	(2.294	0.015	0.082	0.012	0.011	0.083)	$\times10^{-4}$
69.7 – 80.5	(1.534	0.011	0.055	0.008	0.007	0.056)	$\times10^{-4}$
80.5 – 93.0	(1.045	0.009	0.038	0.006	0.005	0.038)	$\times10^{-4}$

Table continued

TABLE SIV – *(Continued)*.

Rigidity [GV]	Φ_{Mg}	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
93.0 – 108	(6.959	0.065	0.250	0.037	0.037	0.256)	$\times 10^{-5}$
108 – 125	(4.628	0.050	0.167	0.025	0.026	0.171)	$\times 10^{-5}$
125 – 147	(3.040	0.035	0.110	0.016	0.019	0.112)	$\times 10^{-5}$
147 – 175	(1.894	0.025	0.069	0.010	0.013	0.070)	$\times 10^{-5}$
175 – 211	(1.155	0.017	0.042	0.006	0.009	0.043)	$\times 10^{-5}$
211 – 259	(6.782	0.112	0.248	0.039	0.059	0.257)	$\times 10^{-6}$
259 – 330	(3.711	0.068	0.136	0.026	0.039	0.144)	$\times 10^{-6}$
330 – 441	(1.759	0.037	0.065	0.017	0.024	0.071)	$\times 10^{-6}$
441 – 660	(7.276	0.171	0.273	0.107	0.139	0.324)	$\times 10^{-7}$
660 – 1200	(1.888	0.053	0.073	0.050	0.064	0.110)	$\times 10^{-7}$
1200 – 3000	(2.845	0.302	0.135	0.055	0.170	0.224)	$\times 10^{-8}$

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TABLE SV: The Si flux Φ_{Si} as a function of rigidity at the top of AMS in units of $[m^2 \cdot sr \cdot s \cdot GV]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_{Si}	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(2.271	0.012	0.097	0.107	0.011	0.145)	$\times 10^{-1}$
2.40 – 2.67	(2.109	0.010	0.087	0.048	0.006	0.099)	$\times 10^{-1}$
2.67 – 2.97	(1.925	0.008	0.077	0.025	0.003	0.081)	$\times 10^{-1}$
2.97 – 3.29	(1.720	0.007	0.067	0.019	0.001	0.069)	$\times 10^{-1}$
3.29 – 3.64	(1.524	0.006	0.058	0.014	0.000	0.060)	$\times 10^{-1}$
3.64 – 4.02	(1.327	0.005	0.050	0.011	0.001	0.051)	$\times 10^{-1}$
4.02 – 4.43	(1.139	0.004	0.043	0.008	0.001	0.043)	$\times 10^{-1}$
4.43 – 4.88	(9.800	0.034	0.365	0.063	0.013	0.371)	$\times 10^{-2}$
4.88 – 5.37	(8.258	0.027	0.306	0.048	0.013	0.310)	$\times 10^{-2}$
5.37 – 5.90	(6.937	0.023	0.257	0.036	0.013	0.259)	$\times 10^{-2}$
5.90 – 6.47	(5.840	0.019	0.216	0.028	0.012	0.218)	$\times 10^{-2}$
6.47 – 7.09	(4.869	0.016	0.180	0.021	0.011	0.181)	$\times 10^{-2}$
7.09 – 7.76	(4.082	0.013	0.151	0.017	0.010	0.152)	$\times 10^{-2}$
7.76 – 8.48	(3.341	0.011	0.123	0.013	0.009	0.124)	$\times 10^{-2}$
8.48 – 9.26	(2.788	0.009	0.103	0.010	0.007	0.104)	$\times 10^{-2}$
9.26 – 10.1	(2.299	0.008	0.085	0.008	0.006	0.085)	$\times 10^{-2}$
10.1 – 11.0	(1.894	0.007	0.070	0.007	0.006	0.070)	$\times 10^{-2}$
11.0 – 12.0	(1.550	0.006	0.057	0.005	0.005	0.058)	$\times 10^{-2}$
12.0 – 13.0	(1.280	0.005	0.047	0.004	0.004	0.048)	$\times 10^{-2}$
13.0 – 14.1	(1.063	0.004	0.039	0.003	0.003	0.039)	$\times 10^{-2}$
14.1 – 15.3	(8.671	0.037	0.320	0.027	0.028	0.322)	$\times 10^{-3}$
15.3 – 16.6	(7.162	0.031	0.264	0.022	0.024	0.266)	$\times 10^{-3}$
16.6 – 18.0	(5.845	0.027	0.216	0.018	0.020	0.217)	$\times 10^{-3}$
18.0 – 19.5	(4.801	0.023	0.177	0.015	0.017	0.179)	$\times 10^{-3}$
19.5 – 21.1	(3.956	0.019	0.146	0.012	0.014	0.147)	$\times 10^{-3}$
21.1 – 22.8	(3.242	0.016	0.120	0.010	0.012	0.121)	$\times 10^{-3}$
22.8 – 24.7	(2.664	0.013	0.098	0.008	0.010	0.099)	$\times 10^{-3}$
24.7 – 26.7	(2.185	0.011	0.081	0.007	0.008	0.081)	$\times 10^{-3}$
26.7 – 28.8	(1.817	0.010	0.067	0.006	0.007	0.068)	$\times 10^{-3}$
28.8 – 33.5	(1.360	0.005	0.050	0.004	0.005	0.051)	$\times 10^{-3}$
33.5 – 38.9	(9.294	0.040	0.345	0.032	0.037	0.348)	$\times 10^{-4}$
38.9 – 45.1	(6.275	0.031	0.233	0.022	0.025	0.236)	$\times 10^{-4}$
45.1 – 52.2	(4.339	0.024	0.162	0.016	0.018	0.163)	$\times 10^{-4}$
52.2 – 60.3	(2.924	0.018	0.109	0.011	0.013	0.111)	$\times 10^{-4}$
60.3 – 69.7	(2.005	0.014	0.075	0.008	0.009	0.076)	$\times 10^{-4}$
69.7 – 80.5	(1.363	0.011	0.051	0.006	0.006	0.052)	$\times 10^{-4}$
80.5 – 93.0	(9.277	0.084	0.350	0.040	0.046	0.355)	$\times 10^{-5}$
93.0 – 108	(6.164	0.062	0.233	0.027	0.032	0.237)	$\times 10^{-5}$

Table continued

TABLE SV – *(Continued)*.

Rigidity [GV]			Φ_{Si}	$\sigma_{\text{stat.}}$	$\sigma_{\text{acc.}}$	$\sigma_{\text{unf.}}$	σ_{scale}	$\sigma_{\text{syst.}}$	
108	–	125	(4.092	0.048	0.155	0.019	0.023	0.158)	$\times10^{-5}$
125	–	147	(2.657	0.034	0.101	0.013	0.016	0.103)	$\times10^{-5}$
147	–	175	(1.721	0.024	0.066	0.009	0.011	0.067)	$\times10^{-5}$
175	–	211	(1.043	0.016	0.040	0.006	0.008	0.041)	$\times10^{-5}$
211	–	259	(6.186	0.110	0.238	0.039	0.053	0.247)	$\times10^{-6}$
259	–	330	(3.275	0.065	0.127	0.025	0.034	0.134)	$\times10^{-6}$
330	–	441	(1.619	0.037	0.064	0.016	0.022	0.069)	$\times10^{-6}$
441	–	660	(6.515	0.164	0.260	0.097	0.125	0.304)	$\times10^{-7}$
660	–	1200	(1.754	0.052	0.073	0.047	0.060	0.105)	$\times10^{-7}$
1200	–	3000	(2.369	0.282	0.124	0.043	0.136	0.189)	$\times10^{-8}$

TABLE SVI: The F flux Φ_F as a function of rigidity at the top of AMS in units of $[\mathrm{m}^2 \cdot \mathrm{sr} \cdot \mathrm{s} \cdot \mathrm{GV}]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_F	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(3.035	0.041	0.111	0.053	0.015	0.124)	$\times 10^{-2}$
2.40 – 2.67	(2.825	0.034	0.100	0.037	0.009	0.107)	$\times 10^{-2}$
2.67 – 2.97	(2.642	0.029	0.091	0.028	0.004	0.095)	$\times 10^{-2}$
2.97 – 3.29	(2.417	0.025	0.082	0.022	0.002	0.084)	$\times 10^{-2}$
3.29 – 3.64	(2.163	0.021	0.072	0.016	0.000	0.074)	$\times 10^{-2}$
3.64 – 4.02	(1.871	0.018	0.062	0.012	0.001	0.063)	$\times 10^{-2}$
4.02 – 4.43	(1.569	0.015	0.051	0.008	0.001	0.052)	$\times 10^{-2}$
4.43 – 4.88	(1.327	0.012	0.043	0.006	0.002	0.044)	$\times 10^{-2}$
4.88 – 5.37	(1.099	0.010	0.036	0.004	0.002	0.036)	$\times 10^{-2}$
5.37 – 5.90	(9.057	0.079	0.294	0.032	0.017	0.296)	$\times 10^{-3}$
5.90 – 6.47	(7.461	0.066	0.242	0.024	0.015	0.244)	$\times 10^{-3}$
6.47 – 7.09	(6.131	0.054	0.199	0.018	0.014	0.200)	$\times 10^{-3}$
7.09 – 7.76	(4.953	0.044	0.161	0.014	0.012	0.162)	$\times 10^{-3}$
7.76 – 8.48	(4.002	0.036	0.130	0.011	0.010	0.131)	$\times 10^{-3}$
8.48 – 9.26	(3.234	0.030	0.105	0.009	0.009	0.106)	$\times 10^{-3}$
9.26 – 10.1	(2.633	0.025	0.086	0.007	0.007	0.086)	$\times 10^{-3}$
10.1 – 11.0	(2.136	0.022	0.069	0.006	0.006	0.070)	$\times 10^{-3}$
11.0 – 12.0	(1.680	0.018	0.055	0.005	0.005	0.055)	$\times 10^{-3}$
12.0 – 13.0	(1.363	0.016	0.044	0.004	0.004	0.045)	$\times 10^{-3}$
13.0 – 14.1	(1.101	0.013	0.036	0.003	0.004	0.036)	$\times 10^{-3}$
14.1 – 15.3	(8.966	0.114	0.292	0.027	0.029	0.295)	$\times 10^{-4}$
15.3 – 16.6	(7.182	0.096	0.234	0.022	0.024	0.237)	$\times 10^{-4}$
16.6 – 18.0	(5.730	0.081	0.187	0.018	0.020	0.189)	$\times 10^{-4}$
18.0 – 19.5	(4.552	0.068	0.149	0.015	0.016	0.151)	$\times 10^{-4}$
19.5 – 21.1	(3.707	0.057	0.121	0.013	0.013	0.123)	$\times 10^{-4}$
21.1 – 22.8	(2.944	0.047	0.097	0.010	0.011	0.098)	$\times 10^{-4}$
22.8 – 24.7	(2.465	0.039	0.081	0.009	0.009	0.082)	$\times 10^{-4}$
24.7 – 26.7	(1.896	0.032	0.063	0.007	0.007	0.063)	$\times 10^{-4}$
26.7 – 28.8	(1.536	0.027	0.051	0.006	0.006	0.052)	$\times 10^{-4}$
28.8 – 33.5	(1.085	0.015	0.036	0.004	0.004	0.037)	$\times 10^{-4}$
33.5 – 38.9	(7.080	0.107	0.239	0.031	0.029	0.242)	$\times 10^{-5}$
38.9 – 45.1	(4.648	0.081	0.158	0.022	0.020	0.161)	$\times 10^{-5}$
45.1 – 52.2	(3.002	0.060	0.103	0.015	0.014	0.105)	$\times 10^{-5}$
52.2 – 60.3	(1.918	0.045	0.067	0.010	0.009	0.068)	$\times 10^{-5}$
60.3 – 69.7	(1.205	0.033	0.042	0.007	0.006	0.043)	$\times 10^{-5}$
69.7 – 80.5	(7.890	0.248	0.279	0.048	0.042	0.286)	$\times 10^{-6}$
80.5 – 93.0	(5.164	0.187	0.184	0.033	0.030	0.190)	$\times 10^{-6}$
93.0 – 108	(3.020	0.129	0.109	0.020	0.019	0.112)	$\times 10^{-6}$

Table continued

TABLE SVI – *(Continued)*.

Rigidity [GV]	Φ_F	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
108 – 125	(2.202	0.104	0.080	0.015	0.015	0.083)	$\times 10^{-6}$
125 – 147	(1.429	0.073	0.053	0.011	0.011	0.055)	$\times 10^{-6}$
147 – 175	(7.812	0.476	0.291	0.064	0.066	0.305)	$\times 10^{-7}$
175 – 211	(4.342	0.314	0.164	0.042	0.042	0.174)	$\times 10^{-7}$
211 – 259	(2.775	0.216	0.106	0.033	0.032	0.116)	$\times 10^{-7}$
259 – 330	(1.458	0.126	0.057	0.024	0.021	0.065)	$\times 10^{-7}$
330 – 441	(6.036	0.661	0.242	0.145	0.110	0.303)	$\times 10^{-8}$
441 – 660	(2.316	0.285	0.097	0.091	0.059	0.146)	$\times 10^{-8}$
660 – 1200	(5.637	0.862	0.264	0.436	0.240	0.563)	$\times 10^{-9}$
1200 – 3000	(5.279	3.931	0.410	0.366	0.392	0.675)	$\times 10^{-10}$

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TABLE SVII: The C flux Φ_C as a function of rigidity at the top of AMS in units of $[m^2 \cdot sr \cdot s \cdot GV]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_C	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(1.793	0.003	0.047	0.020	0.006	0.052)	$\times 10^0$
2.40 – 2.67	(1.677	0.002	0.043	0.015	0.003	0.045)	$\times 10^0$
2.67 – 2.97	(1.504	0.002	0.037	0.011	0.001	0.039)	$\times 10^0$
2.97 – 3.29	(1.313	0.002	0.032	0.008	0.000	0.033)	$\times 10^0$
3.29 – 3.64	(1.132	0.001	0.027	0.006	0.000	0.028)	$\times 10^0$
3.64 – 4.02	(9.665	0.012	0.228	0.044	0.007	0.232)	$\times 10^{-1}$
4.02 – 4.43	(8.209	0.010	0.192	0.032	0.009	0.195)	$\times 10^{-1}$
4.43 – 4.88	(6.929	0.008	0.160	0.023	0.009	0.162)	$\times 10^{-1}$
4.88 – 5.37	(5.796	0.007	0.133	0.017	0.010	0.135)	$\times 10^{-1}$
5.37 – 5.90	(4.820	0.005	0.110	0.012	0.009	0.111)	$\times 10^{-1}$
5.90 – 6.47	(4.013	0.005	0.091	0.009	0.009	0.092)	$\times 10^{-1}$
6.47 – 7.09	(3.300	0.004	0.075	0.007	0.008	0.076)	$\times 10^{-1}$
7.09 – 7.76	(2.707	0.003	0.061	0.005	0.007	0.062)	$\times 10^{-1}$
7.76 – 8.48	(2.217	0.003	0.050	0.004	0.006	0.051)	$\times 10^{-1}$
8.48 – 9.26	(1.811	0.002	0.041	0.003	0.005	0.041)	$\times 10^{-1}$
9.26 – 10.1	(1.475	0.002	0.033	0.003	0.005	0.034)	$\times 10^{-1}$
10.1 – 11.0	(1.203	0.002	0.027	0.002	0.004	0.028)	$\times 10^{-1}$
11.0 – 12.0	(9.762	0.013	0.220	0.018	0.033	0.224)	$\times 10^{-2}$
12.0 – 13.0	(7.961	0.011	0.180	0.015	0.027	0.182)	$\times 10^{-2}$
13.0 – 14.1	(6.543	0.010	0.148	0.013	0.023	0.150)	$\times 10^{-2}$
14.1 – 15.3	(5.348	0.008	0.121	0.011	0.019	0.123)	$\times 10^{-2}$
15.3 – 16.6	(4.362	0.007	0.099	0.009	0.016	0.100)	$\times 10^{-2}$
16.6 – 18.0	(3.558	0.006	0.081	0.008	0.013	0.082)	$\times 10^{-2}$
18.0 – 19.5	(2.904	0.005	0.066	0.007	0.011	0.067)	$\times 10^{-2}$
19.5 – 21.1	(2.375	0.004	0.054	0.006	0.009	0.055)	$\times 10^{-2}$
21.1 – 22.8	(1.939	0.004	0.044	0.005	0.007	0.045)	$\times 10^{-2}$
22.8 – 24.7	(1.585	0.003	0.036	0.005	0.006	0.037)	$\times 10^{-2}$
24.7 – 26.7	(1.286	0.002	0.029	0.004	0.005	0.030)	$\times 10^{-2}$
26.7 – 28.8	(1.052	0.002	0.024	0.003	0.004	0.025)	$\times 10^{-2}$
28.8 – 31.1	(8.599	0.017	0.197	0.030	0.034	0.202)	$\times 10^{-3}$
31.1 – 33.5	(7.045	0.015	0.162	0.026	0.028	0.166)	$\times 10^{-3}$
33.5 – 36.1	(5.789	0.013	0.133	0.022	0.024	0.137)	$\times 10^{-3}$
36.1 – 38.9	(4.743	0.011	0.109	0.019	0.020	0.113)	$\times 10^{-3}$
38.9 – 41.9	(3.896	0.010	0.090	0.016	0.016	0.093)	$\times 10^{-3}$
41.9 – 45.1	(3.175	0.009	0.073	0.014	0.014	0.076)	$\times 10^{-3}$
45.1 – 48.5	(2.618	0.008	0.061	0.012	0.011	0.063)	$\times 10^{-3}$
48.5 – 52.2	(2.160	0.007	0.050	0.010	0.009	0.052)	$\times 10^{-3}$
52.2 – 56.1	(1.779	0.006	0.041	0.009	0.008	0.043)	$\times 10^{-3}$

Table continued

TABLE SVII – *(Continued)*.

Rigidity [GV]	Φ_C	$\sigma_{\text{stat.}}$	$\sigma_{\text{acc.}}$	$\sigma_{\text{unf.}}$	σ_{scale}	$\sigma_{\text{syst.}}$	
56.1 – 60.3	(1.460	0.005	0.034	0.007	0.007	0.035)	$\times 10^{-3}$
60.3 – 64.8	(1.189	0.004	0.028	0.006	0.005	0.029)	$\times 10^{-3}$
64.8 – 69.7	(9.794	0.039	0.229	0.053	0.046	0.240)	$\times 10^{-4}$
69.7 – 74.9	(8.018	0.034	0.188	0.044	0.038	0.197)	$\times 10^{-4}$
74.9 – 80.5	(6.641	0.030	0.156	0.037	0.032	0.164)	$\times 10^{-4}$
80.5 – 86.5	(5.369	0.026	0.126	0.031	0.027	0.133)	$\times 10^{-4}$
86.5 – 93.0	(4.448	0.023	0.105	0.026	0.023	0.110)	$\times 10^{-4}$
93.0 – 100	(3.593	0.020	0.085	0.022	0.019	0.090)	$\times 10^{-4}$
100 – 108	(2.965	0.017	0.070	0.018	0.016	0.074)	$\times 10^{-4}$
108 – 116	(2.419	0.015	0.057	0.015	0.013	0.061)	$\times 10^{-4}$
116 – 125	(1.975	0.013	0.047	0.012	0.011	0.050)	$\times 10^{-4}$
125 – 135	(1.596	0.011	0.038	0.010	0.009	0.040)	$\times 10^{-4}$
135 – 147	(1.289	0.009	0.031	0.008	0.008	0.033)	$\times 10^{-4}$
147 – 160	(9.980	0.075	0.238	0.066	0.061	0.254)	$\times 10^{-5}$
160 – 175	(7.906	0.062	0.189	0.053	0.050	0.203)	$\times 10^{-5}$
175 – 192	(6.154	0.051	0.147	0.043	0.041	0.159)	$\times 10^{-5}$
192 – 211	(4.839	0.043	0.116	0.035	0.034	0.126)	$\times 10^{-5}$
211 – 233	(3.712	0.035	0.089	0.029	0.028	0.098)	$\times 10^{-5}$
233 – 259	(2.854	0.028	0.069	0.024	0.023	0.076)	$\times 10^{-5}$
259 – 291	(2.118	0.022	0.051	0.019	0.019	0.058)	$\times 10^{-5}$
291 – 330	(1.521	0.017	0.037	0.015	0.015	0.043)	$\times 10^{-5}$
330 – 379	(1.079	0.013	0.026	0.012	0.013	0.032)	$\times 10^{-5}$
379 – 441	(7.186	0.091	0.177	0.095	0.099	0.224)	$\times 10^{-6}$
441 – 525	(4.871	0.065	0.121	0.077	0.083	0.166)	$\times 10^{-6}$
525 – 660	(2.853	0.039	0.072	0.056	0.064	0.111)	$\times 10^{-6}$
660 – 880	(1.446	0.022	0.037	0.037	0.045	0.069)	$\times 10^{-6}$
880 – 1300	(5.852	0.100	0.157	0.206	0.264	0.370)	$\times 10^{-7}$
1300 – 3300	(1.170	0.047	0.041	0.041	0.066	0.088)	$\times 10^{-7}$

TABLE SVIII: The O flux Φ_O as a function of rigidity at the top of AMS in units of $[m^2 \cdot sr \cdot s \cdot GV]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_O	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(1.658	0.003	0.052	0.020	0.008	0.057)	$\times 10^{0}$
2.40 – 2.67	(1.524	0.002	0.046	0.015	0.005	0.049)	$\times 10^{0}$
2.67 – 2.97	(1.375	0.002	0.040	0.012	0.002	0.042)	$\times 10^{0}$
2.97 – 3.29	(1.215	0.002	0.034	0.009	0.001	0.035)	$\times 10^{0}$
3.29 – 3.64	(1.057	0.001	0.029	0.007	0.000	0.030)	$\times 10^{0}$
3.64 – 4.02	(9.097	0.012	0.248	0.048	0.005	0.253)	$\times 10^{-1}$
4.02 – 4.43	(7.730	0.010	0.209	0.035	0.007	0.212)	$\times 10^{-1}$
4.43 – 4.88	(6.546	0.008	0.176	0.025	0.008	0.178)	$\times 10^{-1}$
4.88 – 5.37	(5.493	0.007	0.147	0.018	0.009	0.148)	$\times 10^{-1}$
5.37 – 5.90	(4.578	0.006	0.122	0.013	0.009	0.123)	$\times 10^{-1}$
5.90 – 6.47	(3.809	0.005	0.101	0.010	0.008	0.102)	$\times 10^{-1}$
6.47 – 7.09	(3.153	0.004	0.084	0.007	0.007	0.085)	$\times 10^{-1}$
7.09 – 7.76	(2.591	0.003	0.069	0.006	0.006	0.070)	$\times 10^{-1}$
7.76 – 8.48	(2.134	0.003	0.057	0.004	0.005	0.057)	$\times 10^{-1}$
8.48 – 9.26	(1.752	0.002	0.047	0.003	0.005	0.047)	$\times 10^{-1}$
9.26 – 10.1	(1.434	0.002	0.038	0.003	0.004	0.039)	$\times 10^{-1}$
10.1 – 11.0	(1.173	0.002	0.031	0.002	0.003	0.032)	$\times 10^{-1}$
11.0 – 12.0	(9.600	0.013	0.257	0.018	0.029	0.260)	$\times 10^{-2}$
12.0 – 13.0	(7.874	0.012	0.211	0.015	0.024	0.213)	$\times 10^{-2}$
13.0 – 14.1	(6.465	0.010	0.174	0.013	0.021	0.175)	$\times 10^{-2}$
14.1 – 15.3	(5.302	0.009	0.143	0.011	0.017	0.144)	$\times 10^{-2}$
15.3 – 16.6	(4.356	0.007	0.117	0.009	0.015	0.119)	$\times 10^{-2}$
16.6 – 18.0	(3.562	0.006	0.096	0.008	0.012	0.097)	$\times 10^{-2}$
18.0 – 19.5	(2.929	0.005	0.079	0.007	0.010	0.080)	$\times 10^{-2}$
19.5 – 21.1	(2.403	0.004	0.065	0.006	0.009	0.066)	$\times 10^{-2}$
21.1 – 22.8	(1.975	0.004	0.054	0.005	0.007	0.054)	$\times 10^{-2}$
22.8 – 24.7	(1.611	0.003	0.044	0.004	0.006	0.044)	$\times 10^{-2}$
24.7 – 26.7	(1.316	0.003	0.036	0.004	0.005	0.036)	$\times 10^{-2}$
26.7 – 28.8	(1.078	0.002	0.029	0.003	0.004	0.030)	$\times 10^{-2}$
28.8 – 31.1	(8.906	0.019	0.243	0.028	0.034	0.247)	$\times 10^{-3}$
31.1 – 33.5	(7.341	0.016	0.201	0.024	0.029	0.204)	$\times 10^{-3}$
33.5 – 36.1	(6.022	0.014	0.165	0.021	0.024	0.168)	$\times 10^{-3}$
36.1 – 38.9	(4.972	0.012	0.137	0.018	0.020	0.139)	$\times 10^{-3}$
38.9 – 41.9	(4.056	0.011	0.112	0.015	0.016	0.114)	$\times 10^{-3}$
41.9 – 45.1	(3.351	0.009	0.093	0.013	0.014	0.095)	$\times 10^{-3}$
45.1 – 48.5	(2.773	0.008	0.077	0.011	0.012	0.079)	$\times 10^{-3}$
48.5 – 52.2	(2.283	0.007	0.064	0.010	0.010	0.065)	$\times 10^{-3}$

Table continued

TABLE SVIII – *(Continued).*

Rigidity [GV]	Φ_{O}	$\sigma_{\mathrm{stat.}}$	$\sigma_{\mathrm{acc.}}$	$\sigma_{\mathrm{unf.}}$	σ_{scale}	$\sigma_{\mathrm{syst.}}$	
52.2 – 56.1	(1.887	0.006	0.053	0.008	0.008	0.054)	$\times 10^{-3}$
56.1 – 60.3	(1.550	0.006	0.044	0.007	0.007	0.045)	$\times 10^{-3}$
60.3 – 64.8	(1.277	0.005	0.036	0.006	0.006	0.037)	$\times 10^{-3}$
64.8 – 69.7	(1.050	0.004	0.030	0.005	0.005	0.031)	$\times 10^{-3}$
69.7 – 74.9	(8.595	0.037	0.245	0.042	0.040	0.252)	$\times 10^{-4}$
74.9 – 80.5	(7.061	0.032	0.202	0.035	0.034	0.208)	$\times 10^{-4}$
80.5 – 86.5	(5.848	0.028	0.168	0.030	0.029	0.173)	$\times 10^{-4}$
86.5 – 93.0	(4.791	0.025	0.139	0.025	0.024	0.143)	$\times 10^{-4}$
93.0 – 100	(3.939	0.021	0.115	0.021	0.020	0.118)	$\times 10^{-4}$
100 – 108	(3.221	0.018	0.094	0.018	0.017	0.097)	$\times 10^{-4}$
108 – 116	(2.631	0.016	0.077	0.015	0.014	0.080)	$\times 10^{-4}$
116 – 125	(2.176	0.014	0.064	0.012	0.012	0.067)	$\times 10^{-4}$
125 – 135	(1.757	0.012	0.052	0.010	0.010	0.054)	$\times 10^{-4}$
135 – 147	(1.416	0.010	0.043	0.008	0.009	0.044)	$\times 10^{-4}$
147 – 160	(1.117	0.008	0.034	0.007	0.007	0.035)	$\times 10^{-4}$
160 – 175	(8.759	0.069	0.267	0.054	0.058	0.279)	$\times 10^{-5}$
175 – 192	(6.959	0.058	0.214	0.045	0.049	0.224)	$\times 10^{-5}$
192 – 211	(5.418	0.048	0.168	0.037	0.041	0.177)	$\times 10^{-5}$
211 – 233	(4.161	0.039	0.131	0.030	0.034	0.138)	$\times 10^{-5}$
233 – 259	(3.171	0.031	0.101	0.025	0.028	0.107)	$\times 10^{-5}$
259 – 291	(2.370	0.025	0.076	0.020	0.023	0.082)	$\times 10^{-5}$
291 – 330	(1.688	0.019	0.055	0.016	0.019	0.060)	$\times 10^{-5}$
330 – 379	(1.197	0.014	0.040	0.013	0.015	0.044)	$\times 10^{-5}$
379 – 441	(8.146	0.103	0.275	0.108	0.120	0.319)	$\times 10^{-6}$
441 – 525	(5.194	0.071	0.179	0.084	0.093	0.219)	$\times 10^{-6}$
525 – 660	(3.069	0.043	0.109	0.063	0.070	0.144)	$\times 10^{-6}$
660 – 880	(1.579	0.024	0.058	0.044	0.048	0.087)	$\times 10^{-6}$
880 – 1300	(6.737	0.115	0.261	0.273	0.282	0.472)	$\times 10^{-7}$
1300 – 3300	(1.191	0.052	0.057	0.045	0.061	0.095)	$\times 10^{-7}$

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TABLE SIX: The B flux Φ_B as a function of rigidity at the top of AMS in units of $[m^2 \cdot sr \cdot s \cdot GV]^{-1}$ including errors due to statistics (stat.); contributions to the systematic error from the trigger, background, and acceptance (acc.); the rigidity resolution function and unfolding (unf.); the absolute rigidity scale (scale); and the total systematic error (syst.). The contribution of individual sources to the systematic error are added in quadrature to arrive at the total systematic error.

Rigidity [GV]	Φ_B	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
2.15 – 2.40	(5.117	0.015	0.254	0.049	0.018	0.259)	$\times 10^{-1}$
2.40 – 2.67	(4.927	0.013	0.221	0.039	0.011	0.224)	$\times 10^{-1}$
2.67 – 2.97	(4.549	0.011	0.185	0.030	0.006	0.188)	$\times 10^{-1}$
2.97 – 3.29	(4.058	0.010	0.151	0.023	0.002	0.153)	$\times 10^{-1}$
3.29 – 3.64	(3.575	0.008	0.123	0.017	0.001	0.124)	$\times 10^{-1}$
3.64 – 4.02	(3.094	0.007	0.099	0.013	0.002	0.100)	$\times 10^{-1}$
4.02 – 4.43	(2.629	0.006	0.080	0.010	0.003	0.080)	$\times 10^{-1}$
4.43 – 4.88	(2.202	0.005	0.063	0.008	0.004	0.064)	$\times 10^{-1}$
4.88 – 5.37	(1.831	0.004	0.050	0.006	0.004	0.051)	$\times 10^{-1}$
5.37 – 5.90	(1.506	0.003	0.040	0.005	0.004	0.040)	$\times 10^{-1}$
5.90 – 6.47	(1.229	0.002	0.032	0.004	0.003	0.032)	$\times 10^{-1}$
6.47 – 7.09	(1.000	0.002	0.025	0.003	0.003	0.026)	$\times 10^{-1}$
7.09 – 7.76	(8.024	0.017	0.199	0.024	0.025	0.201)	$\times 10^{-2}$
7.76 – 8.48	(6.478	0.014	0.158	0.019	0.021	0.160)	$\times 10^{-2}$
8.48 – 9.26	(5.228	0.011	0.126	0.016	0.018	0.128)	$\times 10^{-2}$
9.26 – 10.1	(4.182	0.009	0.100	0.013	0.015	0.102)	$\times 10^{-2}$
10.1 – 11.0	(3.351	0.008	0.080	0.010	0.012	0.081)	$\times 10^{-2}$
11.0 – 12.0	(2.671	0.007	0.063	0.008	0.010	0.064)	$\times 10^{-2}$
12.0 – 13.0	(2.135	0.006	0.050	0.006	0.008	0.051)	$\times 10^{-2}$
13.0 – 14.1	(1.714	0.005	0.040	0.005	0.007	0.041)	$\times 10^{-2}$
14.1 – 15.3	(1.374	0.004	0.032	0.004	0.006	0.033)	$\times 10^{-2}$
15.3 – 16.6	(1.095	0.003	0.026	0.003	0.005	0.026)	$\times 10^{-2}$
16.6 – 18.0	(8.680	0.029	0.204	0.024	0.038	0.209)	$\times 10^{-3}$
18.0 – 19.5	(6.960	0.024	0.164	0.019	0.031	0.168)	$\times 10^{-3}$
19.5 – 21.1	(5.548	0.020	0.131	0.015	0.025	0.134)	$\times 10^{-3}$
21.1 – 22.8	(4.419	0.017	0.105	0.012	0.020	0.107)	$\times 10^{-3}$
22.8 – 24.7	(3.508	0.014	0.083	0.009	0.017	0.085)	$\times 10^{-3}$
24.7 – 26.7	(2.800	0.011	0.067	0.007	0.013	0.068)	$\times 10^{-3}$
26.7 – 28.8	(2.233	0.009	0.054	0.006	0.011	0.055)	$\times 10^{-3}$
28.8 – 31.1	(1.770	0.008	0.043	0.004	0.009	0.044)	$\times 10^{-3}$
31.1 – 33.5	(1.410	0.007	0.034	0.004	0.007	0.035)	$\times 10^{-3}$
33.5 – 36.1	(1.137	0.006	0.028	0.003	0.006	0.028)	$\times 10^{-3}$
36.1 – 38.9	(9.006	0.049	0.221	0.023	0.047	0.227)	$\times 10^{-4}$
38.9 – 41.9	(7.117	0.042	0.176	0.019	0.038	0.181)	$\times 10^{-4}$
41.9 – 45.1	(5.721	0.036	0.142	0.016	0.031	0.147)	$\times 10^{-4}$
45.1 – 48.5	(4.616	0.032	0.116	0.013	0.025	0.119)	$\times 10^{-4}$
48.5 – 52.2	(3.666	0.027	0.093	0.011	0.021	0.096)	$\times 10^{-4}$
52.2 – 56.1	(2.955	0.024	0.075	0.009	0.017	0.078)	$\times 10^{-4}$

Table continued

TABLE SIX – *(Continued)*.

Rigidity [GV]	Φ_B	$\sigma_{stat.}$	$\sigma_{acc.}$	$\sigma_{unf.}$	σ_{scale}	$\sigma_{syst.}$	
56.1 – 60.3	(2.362	0.020	0.061	0.008	0.014	0.063)	$\times10^{-4}$
60.3 – 64.8	(1.885	0.018	0.049	0.007	0.011	0.051)	$\times10^{-4}$
64.8 – 69.7	(1.508	0.015	0.040	0.006	0.009	0.041)	$\times10^{-4}$
69.7 – 74.9	(1.204	0.013	0.032	0.005	0.008	0.033)	$\times10^{-4}$
74.9 – 80.5	(9.570	0.112	0.256	0.043	0.061	0.266)	$\times10^{-5}$
80.5 – 86.5	(7.660	0.096	0.207	0.037	0.050	0.216)	$\times10^{-5}$
86.5 – 93.0	(6.225	0.083	0.170	0.033	0.042	0.178)	$\times10^{-5}$
93.0 – 100	(4.880	0.071	0.135	0.028	0.034	0.142)	$\times10^{-5}$
100 – 108	(3.762	0.058	0.105	0.023	0.027	0.111)	$\times10^{-5}$
108 – 116	(3.081	0.053	0.087	0.021	0.023	0.092)	$\times10^{-5}$
116 – 125	(2.450	0.044	0.070	0.018	0.019	0.075)	$\times10^{-5}$
125 – 135	(1.915	0.037	0.055	0.016	0.015	0.060)	$\times10^{-5}$
135 – 147	(1.510	0.030	0.044	0.014	0.013	0.048)	$\times10^{-5}$
147 – 160	(1.148	0.025	0.034	0.011	0.010	0.037)	$\times10^{-5}$
160 – 175	(8.909	0.206	0.268	0.098	0.084	0.298)	$\times10^{-6}$
175 – 192	(6.769	0.168	0.206	0.083	0.068	0.233)	$\times10^{-6}$
192 – 211	(5.105	0.138	0.158	0.070	0.056	0.181)	$\times10^{-6}$
211 – 233	(3.868	0.112	0.121	0.059	0.046	0.142)	$\times10^{-6}$
233 – 259	(2.812	0.087	0.089	0.048	0.036	0.108)	$\times10^{-6}$
259 – 291	(2.036	0.067	0.065	0.040	0.029	0.082)	$\times10^{-6}$
291 – 330	(1.360	0.050	0.044	0.030	0.022	0.058)	$\times10^{-6}$
330 – 379	(9.254	0.364	0.300	0.238	0.171	0.419)	$\times10^{-7}$
379 – 441	(6.402	0.269	0.208	0.192	0.137	0.315)	$\times10^{-7}$
441 – 525	(3.933	0.181	0.128	0.141	0.099	0.214)	$\times10^{-7}$
525 – 660	(2.143	0.105	0.070	0.095	0.066	0.135)	$\times10^{-7}$
660 – 880	(1.106	0.059	0.036	0.065	0.044	0.087)	$\times10^{-7}$
880 – 1300	(4.625	0.278	0.153	0.388	0.249	0.486)	$\times10^{-8}$
1300 – 3300	(6.177	1.037	0.290	0.506	0.412	0.714)	$\times10^{-9}$

TABLE SX. The Ne/Si, Na/Si, Mg/Si, Al/Si, S/Si, C/O, and N/O abundance ratios at the source. The AMS data are from Table I. For Ref. [6] ratio values and errors were calculated from Table 6. For errors "Combined Errors" column was used. Errors were propagated in quadrature. For Ref. [37] ratio values and errors were calculated from Table 1 "This work, Calculated GCR Source" column. Errors were propagated in quadrature. For Ref. [38] ratio values and errors were calculated from Table 5. For values "Mean" column was used. For errors "Variance" column was used. Errors were propagated in quadrature. For Ref. [39] ratio values and errors were calculated from Table 2. For errors "Total Statistical & Systematic" column was used. Errors were propagated in quadrature.

Abundance Ratio	AMS	Ref. [6]	Ref. [37]	Ref. [38]	Ref. [39]
Φ_{Ne}/Φ_{Si}	0.833 ± 0.025	0.580 ± 0.030	0.580 ± 0.061	0.581 ± 0.004	0.511 ± 0.058
Φ_{Na}/Φ_{Si}	0.036 ± 0.003	0.0323 ± 0.0097	$0.0324^{+0.0130}_{-0.0077}$	0.040 ± 0.003	0.0372 ± 0.0256
Φ_{Mg}/Φ_{Si}	0.994 ± 0.029	1.038 ± 0.028	1.080 ± 0.040	1.110 ± 0.011	1.111 ± 0.033
Φ_{Al}/Φ_{Si}	0.103 ± 0.004	0.0778 ± 0.012	$0.0778^{+0.0130}_{-0.0100}$	0.0966 ± 0.0083	0.104 ± 0.019
Φ_{S}/Φ_{Si}	0.167 ± 0.006	0.131 ± 0.009	0.131 ± 0.002	0.131 ± 0.002	0.129 ± 0.019
Φ_{C}/Φ_{O}	0.836 ± 0.025	0.807 ± 0.015	$0.850^{+0.066}_{-0.064}$	0.800 ± 0.029	0.760 ± 0.029
Φ_{N}/Φ_{O}	0.092 ± 0.002	0.048 ± 0.012	0.065 ± 0.006	0.072 ± 0.004	0.053 ± 0.037

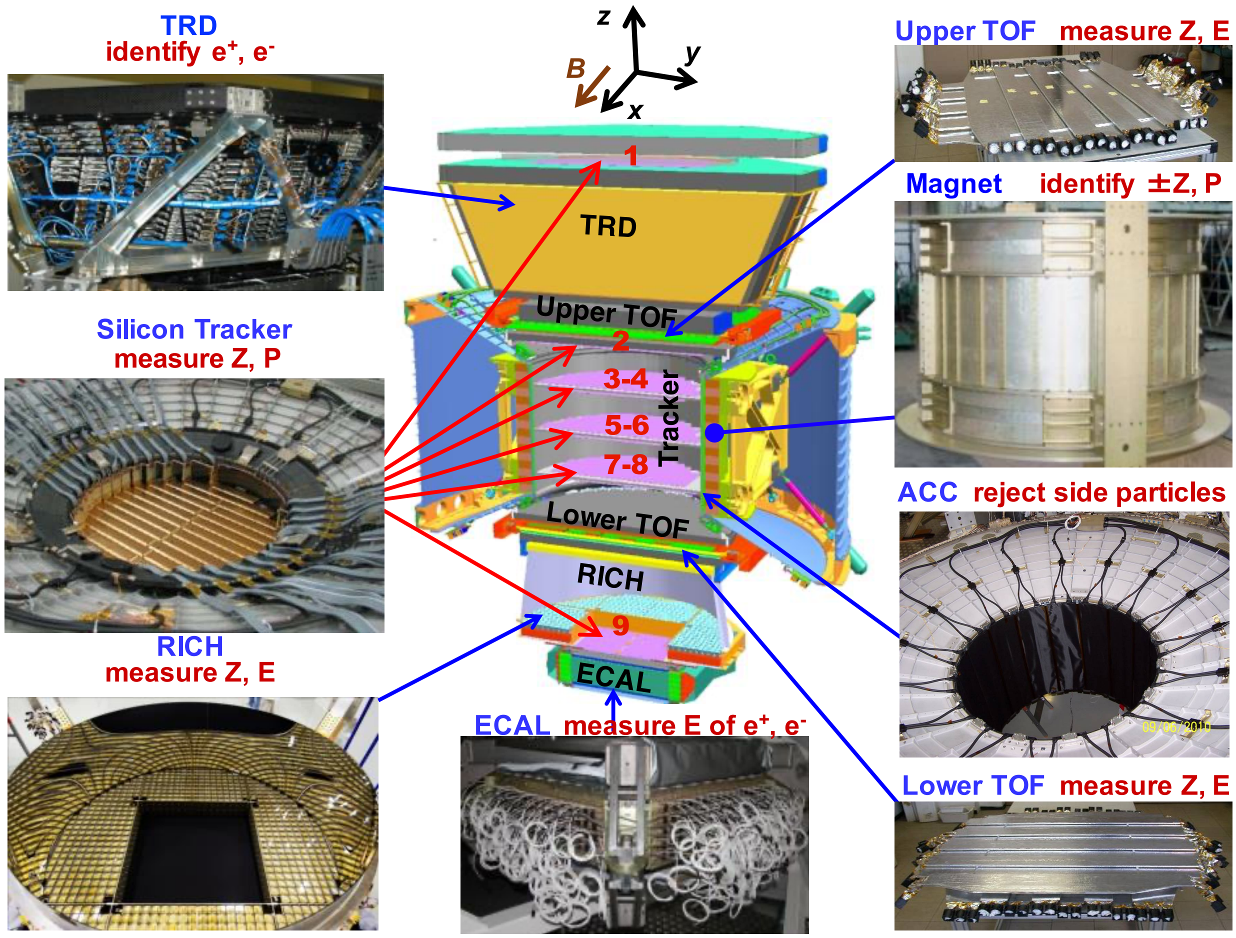

FIG. S1. The AMS detector showing the main elements and their functions. AMS is a TeV precision, multipurpose particle physics magnetic spectrometer in space. It identifies particles and nuclei by their charge Z, energy E and momentum p or rigidity ($R = p/Z$), which are measured independently by the Tracker, TOF, RICH and ECAL. The ACC counters, located in the magnet bore, are used to reject particles entering AMS from the side. The AMS coordinate system is also shown. The x axis is parallel to the main component of the magnetic field and the z axis is pointing vertically with $z = 0$ at the center of the magnet.

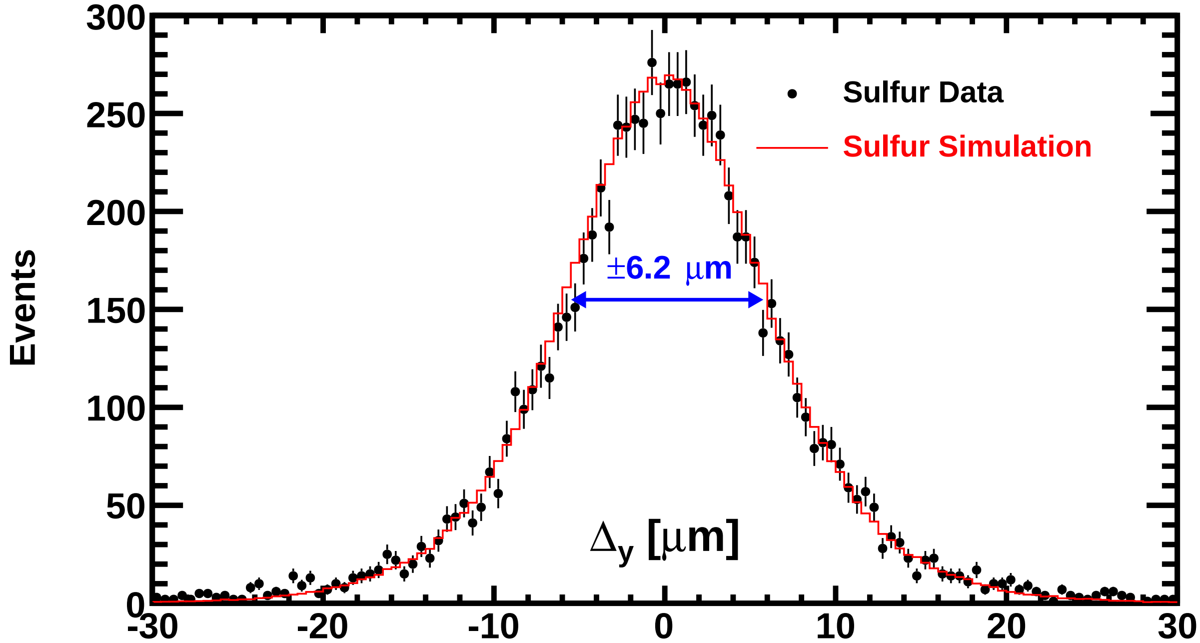

FIG. S2. Comparison of the differences of the coordinates measured in $L3$ or $L5$ to those obtained from the track fit using the measurements from $L1$, $L2$, $L4$, $L6$, $L7$, and $L8$ between data and Monte Carlo simulation in the rigidity range $R > 50$ GV for sulfur nuclei. The observed bending coordinate accuracy is 6.2 μm.

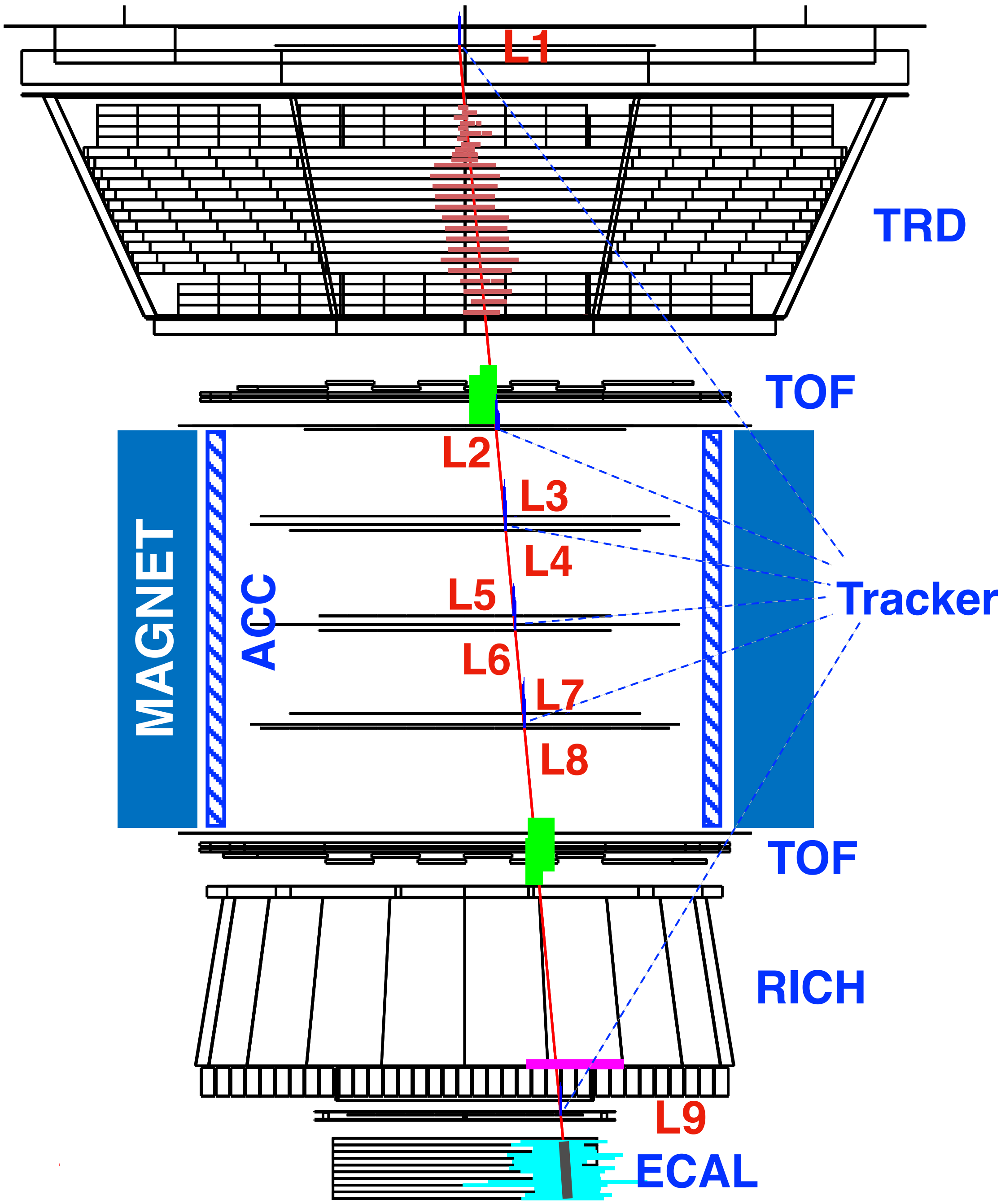

FIG. S3. A display of a sulfur nucleus event in the bending plane. The red line indicates the reconstructed trajectory. The dark red spread in TRD shows the dE/dx measurements in different TRD layers, green areas in upper and lower TOF carry the information of the dE/dx as well as the coordinate and time measurements. The vertical blue lines in the tracker layers carry the information of coordinates and dE/dx or pulse heights. The magenta line in RICH shows the reconstructed Čerenkov photons ring, the light blue area in ECAL shows the shower development and the black rectangle indicates the shower axis. This downward-going event is identified as a sulfur nucleus (Z=16) with $R = 27$ GV.

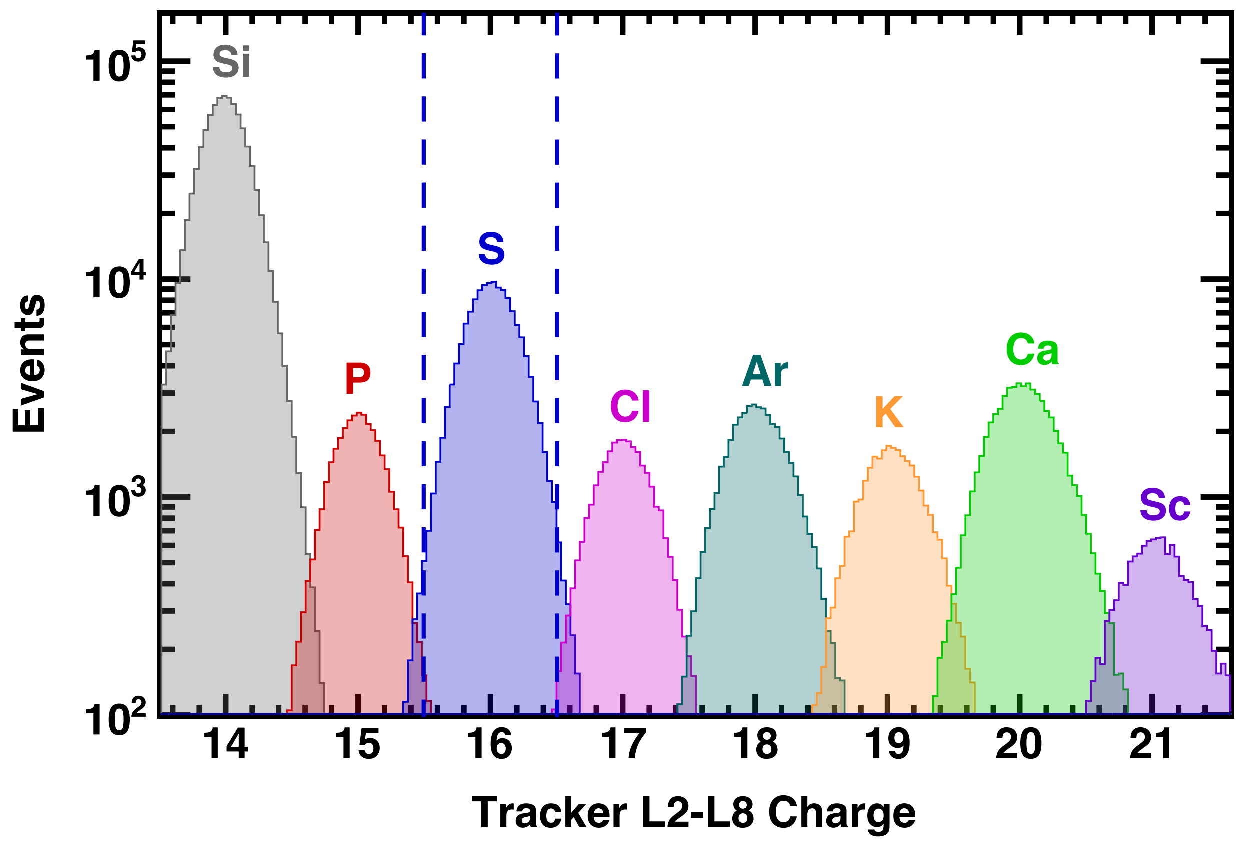

FIG. S4. Distribution of the charge measured with the inner tracker $L2$-$L8$ for samples from $Z = 14$ to $Z = 21$ selected by the combined charge measured with $L1$, the upper TOF, and the lower TOF for rigidities above 4 GV. The dashed vertical lines correspond to the charge selection in the inner tracker for sulfur.

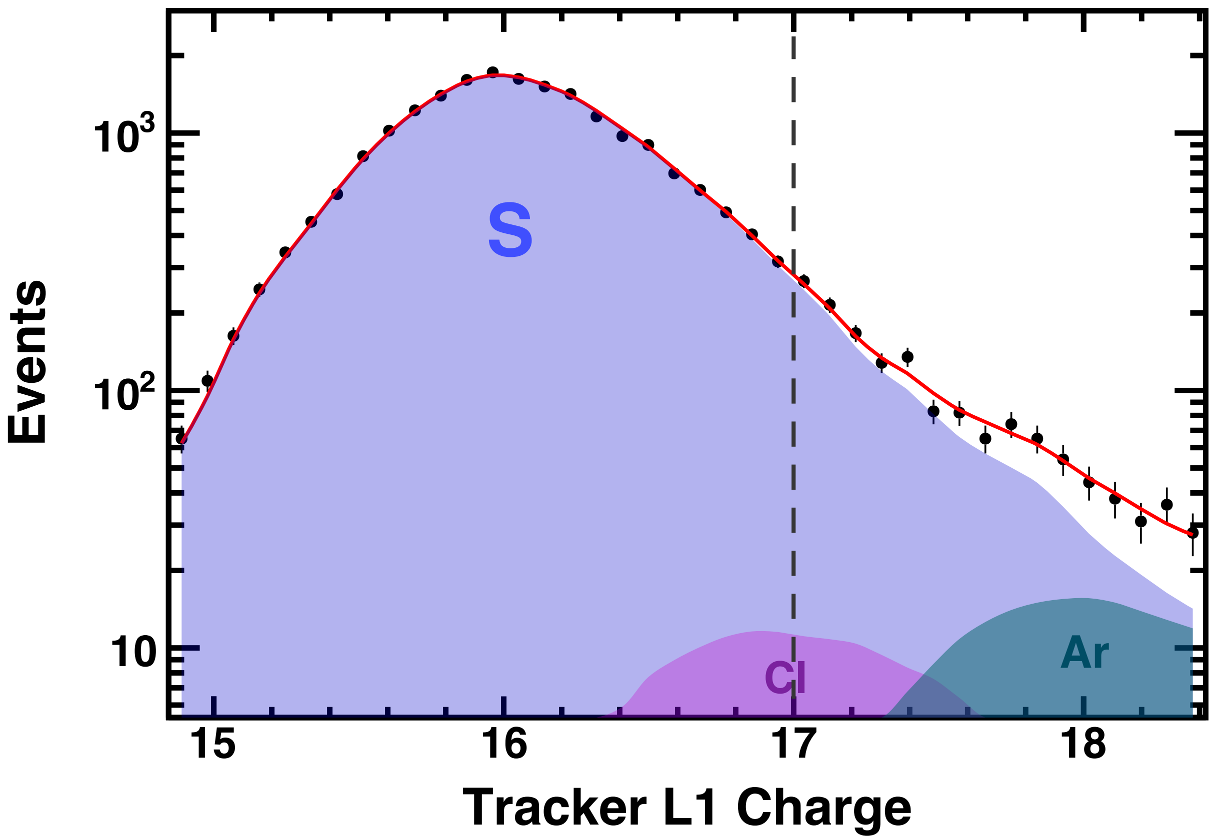

FIG. S5. Charge distribution measured by tracker $L1$ for sulfur events selected by the inner tracker $L2$-$L8$ in the rigidity range between 18 and 22 GV (black dots). The solid red curve shows the fit to the data of the sum of S, Cl, and Ar charge distribution templates. The charge distribution templates are obtained from a selection of non-interacting samples at $L2$ by requiring that $L1$, upper TOF, and $L3$–$L8$ measure the same charge value. The charge selection applied on tracker $L1$ for sulfur is shown as a vertical dashed line.

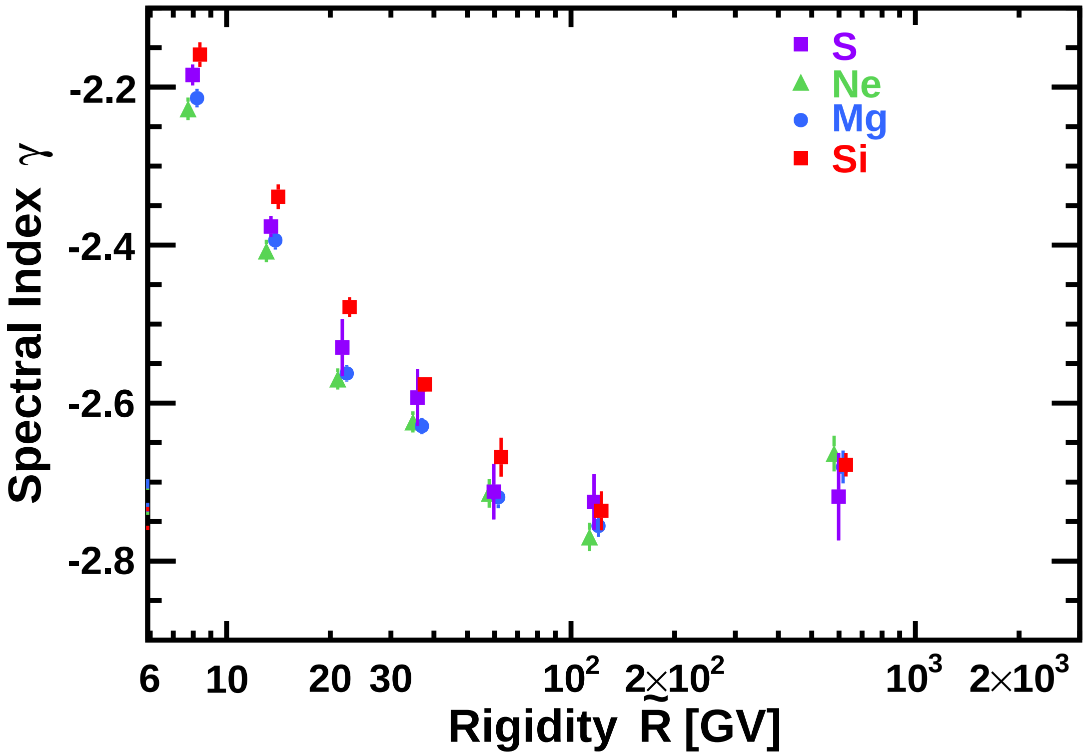

FIG. S6. The rigidity dependence of the S, Ne, Mg, and Si spectral indices. As seen, in the rigidity range 5.9 to 80.5 GV, the Ne, Mg, and S spectral indices are all lower than Si spectral index, and the spectral indices of four elements are identical above ~ 80 GV. For clarity, the Ne, Mg, and Si data points are displaced horizontally.

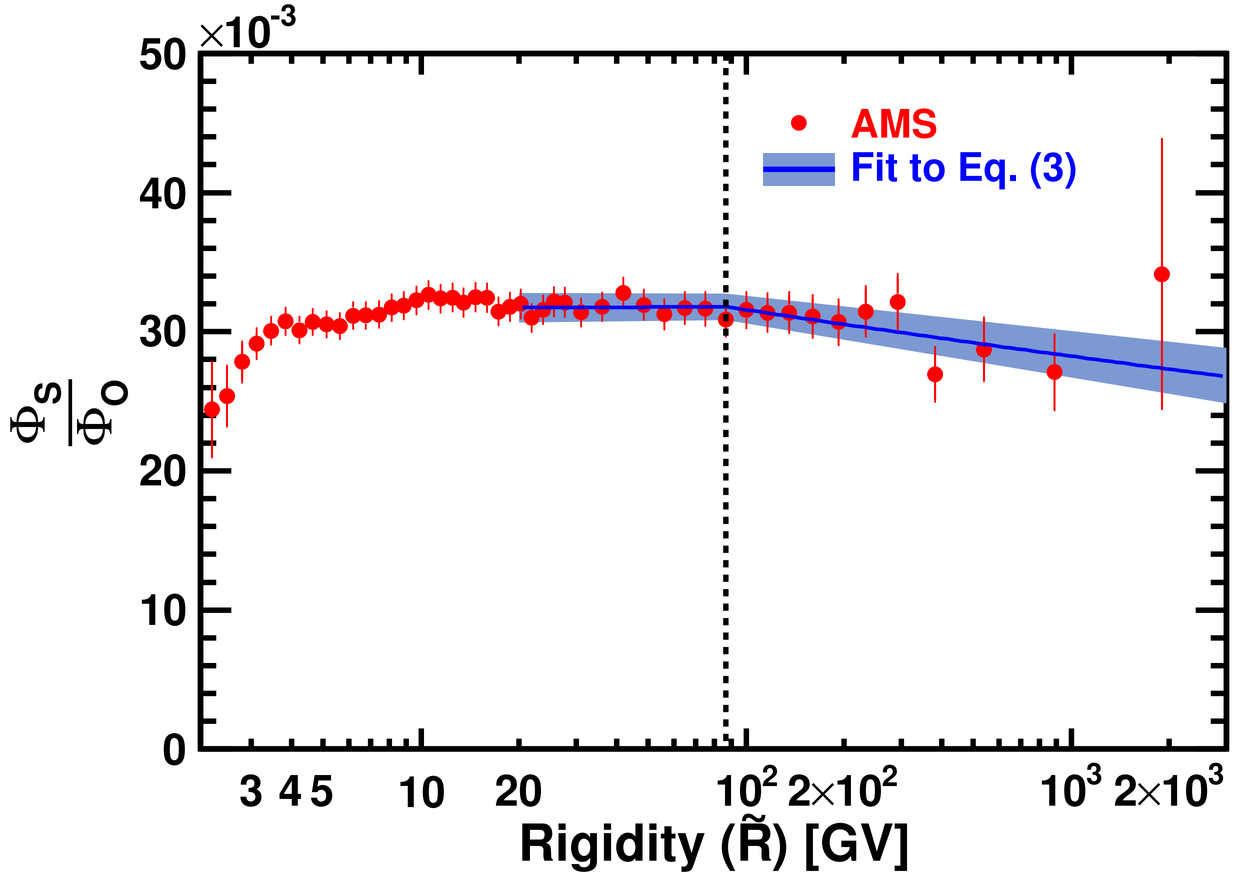

FIG. S7. The AMS Φ_S/Φ_O with total errors as function of rigidity together with the fit to Eq. (3) above 20 GV. The fit yields $C = 0.032 \pm 0.001$, $\Delta = 0.001 \pm 0.010$, $\delta = -0.05 \pm 0.02$ with a χ^2/d.o.f.=15/22. The solid blue curve shows the fit result, blue area shows the fit total error (1σ), and the vertical dashed line separates two fit intervals of Eq. (3).

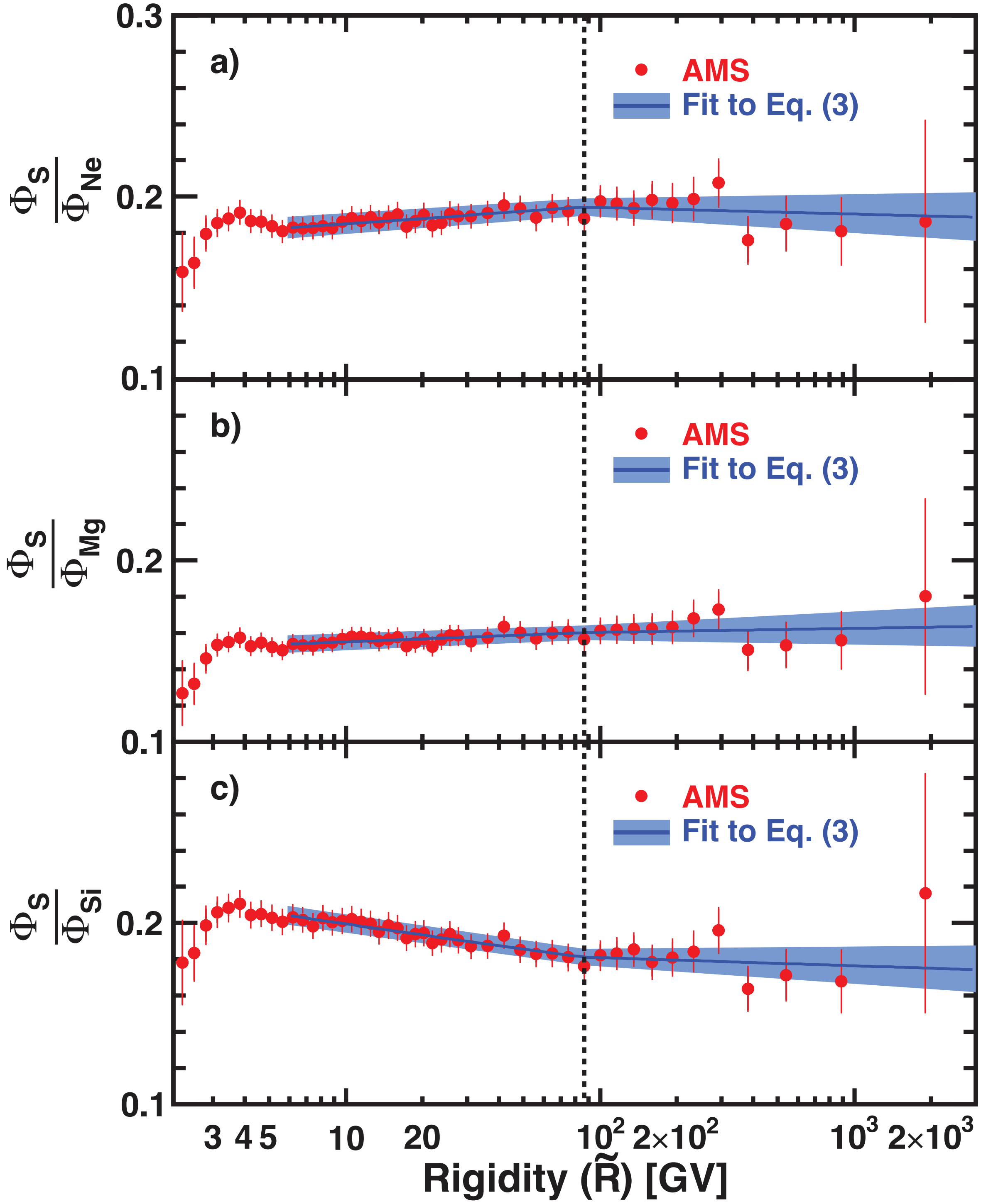

FIG. S8. The AMS a) Φ_S/Φ_{Ne}, b) Φ_S/Φ_{Mg}, and c) Φ_S/Φ_{Si} with their total errors as functions of rigidity together with the fits to Eq. (3). The solid curves show the fit results, blue areas show the fit total errors (1σ), and the vertical dashed lines separates two fit intervals of Eq. (3). For Φ_S/Φ_{Ne}, the fit yields $C^{S/Ne} = 0.194 \pm 0.004$, $\Delta^{S/Ne} = 0.022 \pm 0.007$, and $\delta^{S/Ne} = -0.008 \pm 0.019$ with a χ^2/d.o.f.=21/36. For Φ_S/Φ_{Mg}, the fit yields $C^{S/Mg} = 0.160 \pm 0.004$, $\Delta^{S/Mg} = 0.015 \pm 0.006$, and $\delta^{S/Mg} = 0.006 \pm 0.019$ with a χ^2/d.o.f.=20/36. For Φ_S/Φ_{Si}, the fit yields $C^{S/Si} = 0.181 \pm 0.005$, $\Delta^{S/Si} = -0.045 \pm 0.006$, and $\delta^{S/Si} = -0.011 \pm 0.020$ with a χ^2/d.o.f.=19/36.

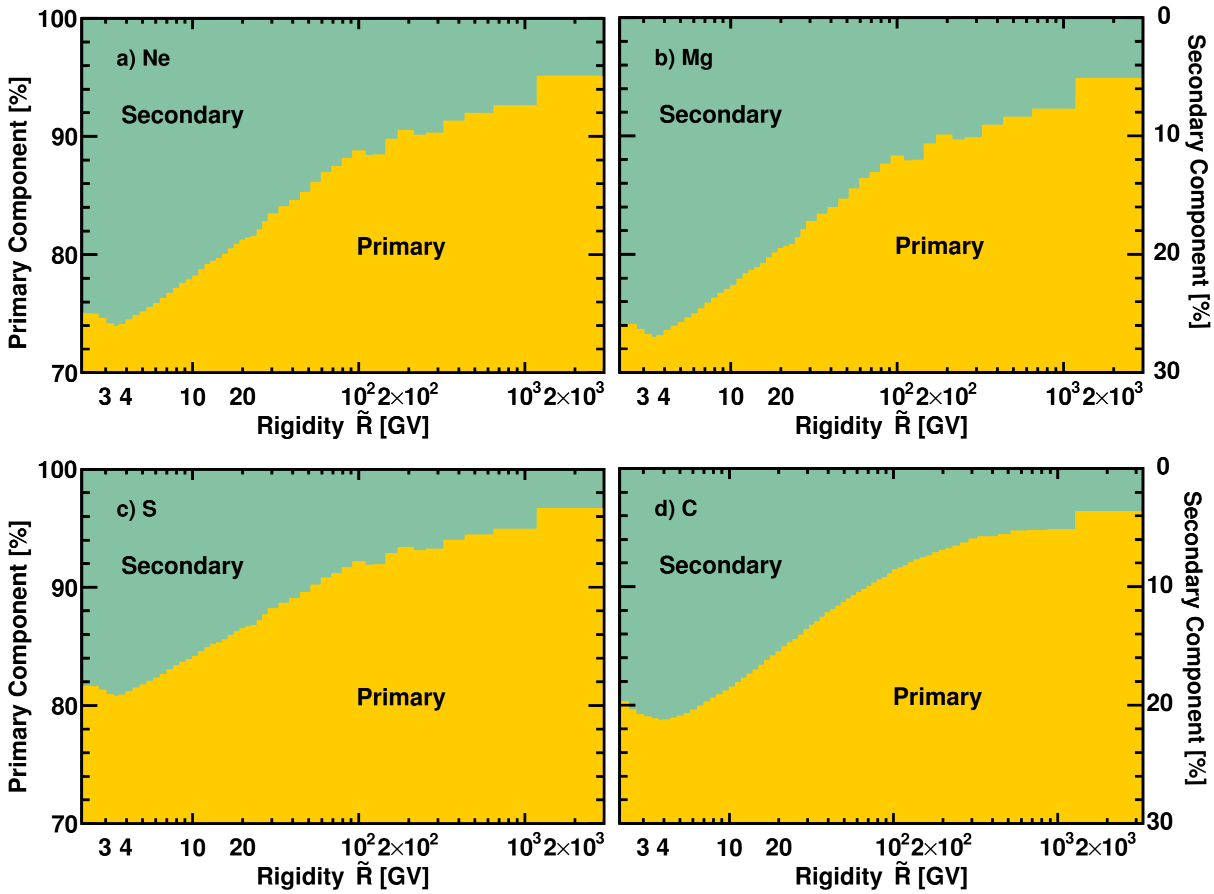

FIG. S9. The fractions of the primary and secondary components in a) Ne, b) Mg, c) S, and d) C fluxes in % as functions of rigidity, obtained from Fig. 4. As seen, above ∼4 GV, with increasing rigidity, the contributions of the primary component increase for all fluxes.