

SPENVIS 4.6.7.2923 29-Jan-2014 21:17:29

**Trapped particle fluxes**  
**Project: ENRIQUE**  
**Enrique's Magic Flying Ship**

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Internal magnetic field model: GSFC 12/66 120 Term updated to 1970.0  
 External magnetic field model: None

**Integral proton spectra**

Energy (MeV)	Total mission average flux (/cm2/s)	Total mission fluence (/cm2)	<a href="#">Mission segment 1</a>	
			Average flux (/cm2/s)	Segment fluence (/cm2)
0.10	9.1441E+01	2.8837E+09	9.1441E+01	2.8837E+09
0.15	9.1039E+01	2.8710E+09	9.1039E+01	2.8710E+09
0.20	9.0639E+01	2.8584E+09	9.0639E+01	2.8584E+09
0.30	9.0325E+01	2.8485E+09	9.0325E+01	2.8485E+09

0.40	9.0013E+01	2.8386E+09	9.0013E+01	2.8386E+09
0.50	8.9603E+01	2.8257E+09	8.9603E+01	2.8257E+09
0.60	8.9195E+01	2.8128E+09	8.9195E+01	2.8128E+09
0.70	8.8802E+01	2.8004E+09	8.8802E+01	2.8004E+09
1.00	8.7685E+01	2.7652E+09	8.7685E+01	2.7652E+09
1.50	8.7057E+01	2.7454E+09	8.7057E+01	2.7454E+09
2.00	8.6432E+01	2.7257E+09	8.6432E+01	2.7257E+09
3.00	8.5382E+01	2.6926E+09	8.5382E+01	2.6926E+09
4.00	8.4351E+01	2.6601E+09	8.4351E+01	2.6601E+09
5.00	8.3366E+01	2.6290E+09	8.3366E+01	2.6290E+09
6.00	8.2383E+01	2.5980E+09	8.2383E+01	2.5980E+09
7.00	8.1294E+01	2.5637E+09	8.1294E+01	2.5637E+09
10.00	7.8255E+01	2.4678E+09	7.8255E+01	2.4678E+09
15.00	7.4491E+01	2.3492E+09	7.4491E+01	2.3492E+09
20.00	7.0735E+01	2.2307E+09	7.0735E+01	2.2307E+09
30.00	6.5526E+01	2.0664E+09	6.5526E+01	2.0664E+09
40.00	6.0520E+01	1.9085E+09	6.0520E+01	1.9085E+09
50.00	5.5916E+01	1.7634E+09	5.5916E+01	1.7634E+09
60.00	5.1564E+01	1.6261E+09	5.1564E+01	1.6261E+09
70.00	4.7251E+01	1.4901E+09	4.7251E+01	1.4901E+09
100.00	3.6202E+01	1.1417E+09	3.6202E+01	1.1417E+09
150.00	2.1857E+01	6.8928E+08	2.1857E+01	6.8928E+08
200.00	1.3367E+01	4.2154E+08	1.3367E+01	4.2154E+08
300.00	4.6431E+00	1.4643E+08	4.6431E+00	1.4643E+08
400.00	1.6454E+00	5.1890E+07	1.6454E+00	5.1890E+07

### Differential proton spectra

Energy (MeV)	Total mission average flux (/cm <sup>2</sup> /MeV/s)	Total mission fluence (/cm <sup>2</sup> /MeV)	Mission segment 1	
			Average flux (/cm <sup>2</sup> /MeV/s)	Segment fluence (/cm <sup>2</sup> /MeV)
0.10	8.0574E+00	2.5410E+08	8.0574E+00	2.5410E+08
0.15	8.0172E+00	2.5283E+08	8.0172E+00	2.5283E+08
0.20	6.3779E+00	2.0113E+08	6.3779E+00	2.0113E+08
0.30	3.1324E+00	9.8782E+07	3.1324E+00	9.8782E+07

0.40	3.6136E+00	1.1396E+08	3.6136E+00	1.1396E+08
0.50	4.0916E+00	1.2903E+08	4.0916E+00	1.2903E+08
0.60	4.0056E+00	1.2632E+08	4.0056E+00	1.2632E+08
0.70	3.8777E+00	1.2229E+08	3.8777E+00	1.2229E+08
1.00	2.7972E+00	8.8211E+07	2.7972E+00	8.8211E+07
1.50	1.2531E+00	3.9517E+07	1.2531E+00	3.9517E+07
2.00	1.1825E+00	3.7292E+07	1.1825E+00	3.7292E+07
3.00	1.0406E+00	3.2816E+07	1.0406E+00	3.2816E+07
4.00	1.0080E+00	3.1787E+07	1.0080E+00	3.1787E+07
5.00	9.8385E-01	3.1027E+07	9.8385E-01	3.1027E+07
6.00	1.0360E+00	3.2670E+07	1.0360E+00	3.2670E+07
7.00	1.0701E+00	3.3747E+07	1.0701E+00	3.3747E+07
10.00	9.1551E-01	2.8872E+07	9.1551E-01	2.8872E+07
15.00	7.5196E-01	2.3714E+07	7.5196E-01	2.3714E+07
20.00	6.7449E-01	2.1271E+07	6.7449E-01	2.1271E+07
30.00	5.1077E-01	1.6108E+07	5.1077E-01	1.6108E+07
40.00	4.8050E-01	1.5153E+07	4.8050E-01	1.5153E+07
50.00	4.4776E-01	1.4121E+07	4.4776E-01	1.4121E+07
60.00	4.3324E-01	1.3663E+07	4.3324E-01	1.3663E+07
70.00	4.1554E-01	1.3104E+07	4.1554E-01	1.3104E+07
100.00	3.3779E-01	1.0653E+07	3.3779E-01	1.0653E+07
150.00	2.2835E-01	7.2012E+06	2.2835E-01	7.2012E+06
200.00	1.4228E-01	4.4870E+06	1.4228E-01	4.4870E+06
300.00	5.8607E-02	1.8482E+06	5.8607E-02	1.8482E+06
400.00	1.3474E-03	4.2492E+04	1.3474E-03	4.2492E+04

### Trapped electron model: AE-8 MAX

Internal magnetic field model: Jensen & Cain 1960 updated to 1960.0

External magnetic field model: None

Local time variation is not taken into account

Probability that fluxes will not be exceeded (AE-4): 50.0%

## Integral electron spectra

Energy (MeV)	Total mission average flux (/cm2/s)	Total mission fluence (/cm2)	Mission segment 1	
			Average flux (/cm2/s)	Segment fluence (/cm2)
4.0E-02	1.4553E+05	4.5896E+12	1.4553E+05	4.5896E+12
0.10	9.7046E+04	3.0604E+12	9.7046E+04	3.0604E+12
0.20	3.9873E+04	1.2574E+12	3.9873E+04	1.2574E+12
0.30	1.5601E+04	4.9201E+11	1.5601E+04	4.9201E+11
0.40	5.7319E+03	1.8076E+11	5.7319E+03	1.8076E+11
0.50	2.1092E+03	6.6515E+10	2.1092E+03	6.6515E+10
0.60	1.2838E+03	4.0485E+10	1.2838E+03	4.0485E+10
0.70	7.9131E+02	2.4955E+10	7.9131E+02	2.4955E+10
0.80	5.3193E+02	1.6775E+10	5.3193E+02	1.6775E+10
1.00	2.8250E+02	8.9088E+09	2.8250E+02	8.9088E+09
1.25	1.7330E+02	5.4652E+09	1.7330E+02	5.4652E+09
1.50	1.0656E+02	3.3604E+09	1.0656E+02	3.3604E+09
1.75	7.1110E+01	2.2425E+09	7.1110E+01	2.2425E+09
2.00	4.7499E+01	1.4979E+09	4.7499E+01	1.4979E+09
2.25	3.2297E+01	1.0185E+09	3.2297E+01	1.0185E+09
2.50	2.1980E+01	6.9318E+08	2.1980E+01	6.9318E+08
2.75	8.9069E+00	2.8089E+08	8.9069E+00	2.8089E+08
3.00	3.6614E+00	1.1547E+08	3.6614E+00	1.1547E+08
3.25	1.1099E+00	3.5003E+07	1.1099E+00	3.5003E+07
3.50	3.3733E-01	1.0638E+07	3.3733E-01	1.0638E+07
3.75	1.0215E-01	3.2213E+06	1.0215E-01	3.2213E+06
4.00	1.4195E-02	4.4764E+05	1.4195E-02	4.4764E+05
4.25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.50	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.75	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.50	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.50	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

## Differential electron spectra

Energy (MeV)	Total mission average flux (/cm <sup>2</sup> /MeV/s)	Total mission fluence (/cm <sup>2</sup> /MeV)	Mission segment 1	
			Average flux (/cm <sup>2</sup> /MeV/s)	Segment fluence (/cm <sup>2</sup> /MeV)
4.0E-02	8.9681E+05	2.8282E+13	8.9681E+05	2.8282E+13
0.10	7.1949E+05	2.2690E+13	7.1949E+05	2.2690E+13
0.20	4.0722E+05	1.2842E+13	4.0722E+05	1.2842E+13
0.30	1.7071E+05	5.3834E+12	1.7071E+05	5.3834E+12
0.40	6.7461E+04	2.1275E+12	6.7461E+04	2.1275E+12
0.50	2.2241E+04	7.0138E+11	2.2241E+04	7.0138E+11
0.60	6.5894E+03	2.0780E+11	6.5894E+03	2.0780E+11
0.70	3.7592E+03	1.1855E+11	3.7592E+03	1.1855E+11
0.80	2.1449E+03	6.7642E+10	2.1449E+03	6.7642E+10
1.00	8.8699E+02	2.7972E+10	8.8699E+02	2.7972E+10
1.25	3.5188E+02	1.1097E+10	3.5188E+02	1.1097E+10
1.50	2.0438E+02	6.4453E+09	2.0438E+02	6.4453E+09
1.75	1.1812E+02	3.7249E+09	1.1812E+02	3.7249E+09
2.00	7.7625E+01	2.4480E+09	7.7625E+01	2.4480E+09
2.25	5.1036E+01	1.6095E+09	5.1036E+01	1.6095E+09
2.50	4.6780E+01	1.4753E+09	4.6780E+01	1.4753E+09
2.75	3.6638E+01	1.1554E+09	3.6638E+01	1.1554E+09
3.00	1.5594E+01	4.9177E+08	1.5594E+01	4.9177E+08
3.25	6.6482E+00	2.0966E+08	6.6482E+00	2.0966E+08
3.50	2.0156E+00	6.3564E+07	2.0156E+00	6.3564E+07
3.75	6.4626E-01	2.0381E+07	6.4626E-01	2.0381E+07
4.00	2.0429E-01	6.4426E+06	2.0429E-01	6.4426E+06
4.25	2.8389E-02	8.9528E+05	2.8389E-02	8.9528E+05
4.50	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
4.75	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
5.50	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6.50	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7.00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

**Exposure for proton flux exceeding threshold  
1.00 /cm2/s**

Energy (MeV)	Total exposure (hr)	<u>Mission segment 1</u>	
		Exposure time (hr)	Orbit fraction
0.10	1034.17	1034.17	0.1181
0.15	1034.17	1034.17	0.1181
0.20	1034.17	1034.17	0.1181
0.30	1034.17	1034.17	0.1181
0.40	1034.17	1034.17	0.1181
0.50	1034.17	1034.17	0.1181
0.60	1034.17	1034.17	0.1181
0.70	1028.08	1028.08	0.1174
1.00	1022.00	1022.00	0.1167
1.50	1022.00	1022.00	0.1167
2.00	1022.00	1022.00	0.1167
3.00	1022.00	1022.00	0.1167
4.00	1015.92	1015.92	0.1160
5.00	1015.92	1015.92	0.1160
6.00	1015.92	1015.92	0.1160
7.00	1015.92	1015.92	0.1160
10.00	1015.92	1015.92	0.1160
15.00	1009.83	1009.83	0.1153
20.00	1003.75	1003.75	0.1146
30.00	1003.75	1003.75	0.1146
40.00	1003.75	1003.75	0.1146
50.00	997.67	997.67	0.1139
60.00	997.67	997.67	0.1139
70.00	997.67	997.67	0.1139
100.00	955.08	955.08	0.1090
150.00	912.50	912.50	0.1042
200.00	839.50	839.50	0.0958
300.00	730.00	730.00	0.0833
400.00	657.00	657.00	0.0750

**Exposure for electron flux exceeding threshold  
1.00 /cm<sup>2</sup>/s**

Energy (MeV)	Total exposure (hr)	<u>Mission segment 1</u>	
		Exposure time (hr)	Orbit fraction
0.04	1113.25	1113.25	0.1271
0.10	1113.25	1113.25	0.1271
0.20	1113.25	1113.25	0.1271
0.30	1107.17	1107.17	0.1264
0.40	1076.75	1076.75	0.1229
0.50	1040.25	1040.25	0.1188
0.60	1022.00	1022.00	0.1167
0.70	1015.92	1015.92	0.1160
0.80	1009.83	1009.83	0.1153
1.00	985.50	985.50	0.1125
1.25	973.33	973.33	0.1111
1.50	973.33	973.33	0.1111
1.75	918.58	918.58	0.1049
2.00	918.58	918.58	0.1049
2.25	894.25	894.25	0.1021
2.50	863.83	863.83	0.0986
2.75	821.25	821.25	0.0937
3.00	772.58	772.58	0.0882
3.25	675.25	675.25	0.0771
3.50	517.08	517.08	0.0590
3.75	374.12	374.12	0.0427
4.00	85.17	85.17	0.0097
4.25	0.00	0.00	0.0000
4.50	0.00	0.00	0.0000
4.75	0.00	0.00	0.0000
5.00	0.00	0.00	0.0000
5.50	0.00	0.00	0.0000
6.00	0.00	0.00	0.0000
6.50	0.00	0.00	0.0000

7.00	0.00	0.00	0.0000
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**Integral peak proton flux (/cm<sup>2</sup>/s); click on the links in the table headers for details on position and time**

Energy (MeV)	<a href="#">Segment 1</a>
0.10	2.4030E+03
0.15	2.3964E+03
0.20	2.3899E+03
0.30	2.3815E+03
0.40	2.3732E+03
0.50	2.3650E+03
0.60	2.3568E+03
0.70	2.3501E+03
1.00	2.3279E+03
1.50	2.3109E+03
2.00	2.2940E+03
3.00	2.2762E+03
4.00	2.2586E+03
5.00	2.2387E+03
6.00	2.2190E+03
7.00	2.1788E+03
10.00	2.0891E+03
15.00	2.0394E+03
20.00	1.9245E+03
30.00	1.8205E+03
40.00	1.6601E+03
50.00	1.5138E+03
60.00	1.3854E+03
70.00	1.2499E+03
100.00	9.4152E+02



150.00	5.8682E+02
200.00	3.6575E+02
300.00	1.3657E+02
400.00	5.0994E+01

**Integral peak  
electron  
flux (/cm<sup>2</sup>/s); click  
on the links in the  
table headers for  
details on position  
and time**

<b>Energy (MeV)</b>	<b><a href="#">Segment 1</a></b>
0.04	6.8404E+06
0.10	4.4703E+06
0.20	1.8481E+06
0.30	7.3904E+05
0.40	2.8002E+05
0.50	1.0610E+05
0.60	7.2191E+04
0.70	4.9120E+04
0.80	3.5242E+04
1.00	2.0172E+04
1.25	1.2793E+04
1.50	8.1127E+03
1.75	5.4353E+03
2.00	3.6415E+03
2.25	2.5293E+03
2.50	1.7568E+03
2.75	6.8024E+02
3.00	2.6340E+02
3.25	7.5434E+01
3.50	2.1604E+01
3.75	6.2097E+00
4.00	1.8137E+00

4.25	0.0000E+00
4.50	0.0000E+00
4.75	0.0000E+00
5.00	0.0000E+00
5.50	0.0000E+00
6.00	0.0000E+00
6.50	0.0000E+00
7.00	0.0000E+00