

1 Ulysses KET datasets (CAU)

The Kiel Electron Telescope (KET) is part of the Ulysses COsmic ray and Solar Particle INvestigation (COSPIN) experiment, which has been described in detail by Simpson et al. [1992]. The instrument is designed to measure electron, proton and α -particle fluxes in several energy windows ranging from a few MeV/n up to and above a few GeV/n. This file shall explain the file structure of the KET files provided for the SEPServer project. Intensities are provided using the geometrical factor and energy ranges as described below.

1.1 Sected proton and electron data

The file format of KET data is ASCII.

The electron, proton and helium intensity and count rate data for the solar cycles 23-24 cover the time period October 27, 1990 – May 31, 2009. The time coverage is in principle continuous, but does include several data gap at irregular times and of varying length. The data gaps are not marked or filled in any way, but the data are simply missing.

The basic time resolution (accumulation time) of the measurements is variable due to the variable data transmission rate of Ulysses. They vary between ~121 s and ~267 s. The start of the accumulation time is given by year, Day Of Year, Hour of Day, Minute of hour, Second of Minute and Millisecond of seconds.

The data format and contents are defined in [Table 1](#). The nominal widths of energy channels and their nominal response factors are given in [Table 2](#).

The estimated total size of the dataset is less than 1 GB.

Table 1 KET sectorized data format for the electron and proton data

Column	Physical Quantity	Format	Units	Dependent Quantity	Range of dependent quantity	Value range	Dropout Value	Comments
1	Year	I5	N/A			see format	-707	Time block (start time of the record)
2	Day of year	I5	N/A			see format	-707	Time block (start time of the record)
3	Hour of day	I5	N/A			see format	-707	Time block (start time of the record)
4	Minute of hour	I5	N/A			see format	-707	Time block (start time of the record)
5	Second of minute	I5	N/A			see format	-707	Time block (start time of the record)
6	Millisecond of second	I5	N/A			see format	-707	Time block (start time of the record)

7	Accumulation time	I10	N/A			see format	-707	Milliseconds
8	Lifetime	F12.3	N/A			see format	-707	Fraction of the accumulation time
9	Protons P4 (Sector 0)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$
10	Protons P4 (Sector 0)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
11	Protons P4 (Sector 1)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$
12	Protons P4 (Sector 1)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
13	Protons P4 (Sector 2)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$
14	Protons P4 (Sector 2)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
15	Protons P4 (Sector 3)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$
16	Protons P4 (Sector 3)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
17	Protons P4 (Sector 4)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$
18	Protons P4 (Sector 4)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
19	Protons P4 (Sector 5)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$
20	Protons P4 (Sector 5)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
21	Protons P4 (Sector 6)	E12.3	$\text{cm}^{-2} \text{s}^{-1} \text{sr}^{-1} \text{MeV}^{-1} \text{nucleon}^{-1}$	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s MeV})$

22	Protons P4 (Sector 6)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
23	Protons P4 (Sector 7)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET protons, Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
24	Protons P4 (Sector 7)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET protons, Counts
25	Electrons E4 (Sector 0)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
26	Electrons E4 (Sector 0)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts
27	Electrons E4 (Sector 1)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
28	Electrons E4 (Sector 1)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts
29	Electrons E4 (Sector 2)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
30	Electrons E4 (Sector 2)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts
31	Electrons E4 (Sector 3)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
32	Electrons E4 (Sector 3)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts
33	Electrons E4 (Sector 4)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
34	Electrons E4 (Sector 4)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts
35	Electrons E4 (Sector 5)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
36	Electrons E4 (Sector 5)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts

37	Electrons E4 (Sector 6)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
38	Electrons E4 (Sector 6)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts
39	Electrons E4 (Sector 7)	E12.3	$\text{cm}^{-2} \text{s}^{-1}$ sr^{-1} MeV^{-1} nucleon^{-1}	see Table 2	see Table 2	see format	-707	KET Electron Intensity in $1/(\text{cm}^2 \text{sr s}$ $\text{MeV})$
40	Electrons E4 (Sector 7)	F12.3	counts	see Table 2	see Table 2	see format	-707	KET Electron Counts

Table 2. KET energy channels and response factors

Particle	Energy range (MeV/n)	Response factor ($\text{cm}^2 \text{sr}$)
KET P1 protons		
Protons	2.7 – 5.4	17.6
Protons	23.1-34.1	71.5
Helium	2.3-2.7	2.6
KET P4 protons		
Protons	5.4 – 23..1	115
Helium	2.7 – 6	15
Helium	20.4-34.2	89.7
KET P32 protons		
Protons	34-125	70
KET P116 protons		
Protons (F)	125-250	152
Protons (B)	160-260	
Helium	130-190	-
KET P190 Protons		
Protons (F)	250-2000	3300
Protons (B)	260-2000	
KET P4000 Protons		
Protons	>2000	Count rate

KET A4 Helium		
Helium	5.4-23.1	115
Heavy Ions	Tbd.	Tbd.
KET A32 Helium		
Helium (F)	34-125	70
KET A116 Helium		
Helium (F)	125 – 155	88
Helium B	155 – 225	
KET A190 Helium		
Helium (F)	250 – 2100	3200
Helium (B)	260 – 2100	
KET A4000 Helium		
Helium	> 2100	Flux
KET E4 Electrons		
Electrons	4 – 9	Count Rate
KET E12 Electrons		
Electrons	9 – 500	Count rate
KET E300 Electrons		
Electrons	>500	Count rate
Protons	>2000	Count rate