

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. Information about the energy loss in the semiconductor detectors D1 and D2 and the photon distribution in C1, C2, and S2 is provided as described below.

1.1 Puls Height Analysis electron, proton and helium data

The file format of KET data is ASCII.

The electron, proton and helium intensity and PHA rate data for the solar cycles 23-24 cover the time period October 23, 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 4.0 GB.

Table 1. KET data format for the electron, proton and helium 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		Table 3	see format	-707	Milliseconds
8	Type	I5	N/A			0-15		Type of coincidence
9	Sector	I5	N/A			0-8		Sector number wrt. to the Sun puls
10	Priority	I5	N/A			0-1		Prioritized set of PHA if 1
11	PHA-1	I5	N/A		Table 3	0-255		Digitized signal
12	PHA-2	I5	N/A		Table 3	0-255		Digitized signal
13	PHA-3	I5	N/A		Table 3	0-255		Digitized signal
14	PHA-4	I5	N/A		Table 3	0-255		Digitized signal
15	SKET	I5	N/A		Table 4	0 - 4095		Status of the instrument

Table 2. KET energy channels and response factors

Particle	Energy range (MeV/n)	Response factor (cm ² 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

Table 3 Range of possible types in

Table 1 using the energy channels as described in Table 2. Note, only four integers of PHA are given. The last five columns give the detectors for which the information is available.

Type	Particle channel (Table 2)	Information for Detector				
		D1	C1	D2	C2	S2
0	calibration mode	x	-	x	x	x
1	P4	x	-	-	-	-
2	P32	x	-	x	-	-
3	P116	x	-	x	-	x
4	A4	x	-	-	-	-
5	A32	x	-	x	-	-
6	A116	x	-	x	-	x
7	E4	x	x	x	-	-
8	A4000	x	-	x	x	x
9	P1	x	-	-	-	-
10	P190	x	-	x	x	x
11	P4000	x	-	x	x	x
12	A190	x	-	x	x	x
13	E12	x	x	x	x	-
14	E300	x	-	x	x	x
15	calibration mode	x	-	x	x	x

