#667

VOYAGER 2

URANUS ENCOUNTER MAGNETOMETER DATA

HG COORDINATES 77-076A-05G
U1 COORDINATES 77-076A-05H

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents To find associated documents you will need to know the document ID number and then click here.
http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

REQ. AGENT
DHG

RAND NO.

ACQ. AGENT
PSB

VOYAGER 2

URANUS ENCOUNTER MAGNETOMETER DATA

PSFP-00129 77-076A-05G (HG COORDINATES)
PSFP-00070 77-076A-05H (U1 COORDINATES)

This data set catalog contains four tapes (3 for 05G, and 1 for 05H). The tapes are 9-track, binary, 1600 bpi. They are IBM Standard label (one data file, one header file and one trailer file). The D and C numbers and time spans follow:

77-076A-05G - HG COORDINATES

D#	C#	TIME SPAN
D-78711	C-26812	01/19/86 - 01/24/86
D-78712	C-26813	01/23/86 - 01/25/86
D-78713	C-26814	01/24/86 - 01/30/86

77-076A-05H - U1 COORDINATES

D#	C#	TIME SPAN
D-78714	C-26815	01/23/86 - 01/25/86

77-076A-05G
05H

Voyager Conjoint Data Tape Format
For Combined MAG And PLS Analysis

Tapes are IBM standard label, 9 track and contain IBM variable blocked (VB) records. Master tapes are 6250 BPI, distribution copies may be 1600/800 BPI.

There are four distinct types of records: header; magnetometer science; plasma science; and engineering. All Master Library tapes will contain all data record types. Prior to filing of these tapes in the NSSDC at GSFC, any tapes distributed outside the principal sphere of interest (MIT and GSFC), will contain only one type of data (MAG or PLS) plus engineering, unless there is mutual PI agreement to do otherwise.

Engineering records always precede science records. Science records are time ordered by the end time of the PLS data blocks and the begin time of the MAG data blocks. The time tag represents the begin time of a block.

The first word in each record is an identifier for that type of data. The following table lists the record characteristics and their frequency of occurrence.

Record Type	ID	Rate	Length (Bytes)	Mode
Engineering	ENG	1/12min	1092v	GS3,CR1,CR2
		1/48min		CR3,CR4,CR5,CR6,CR7
Low field magnetometer	LFM	1/48sec	2076	All modes
Proton high resolution	M	1/12sec	2540v	CR1
		1/96sec		GS3,CR2,CR3,CR4
		1/192sec		CR5,CR6
Proton low resolution	L	1/96sec	1056	GS3,CR2,CR3,CR4
		1/192sec		CR5,CR6
		1/384sec		CR7
Electron	E1/E2	1/12sec	680	CR1
		2/96sec		GS3,CR2,CR3,CR4
		2/192sec		CR5,CR6
		2/384sec		CR7

High field MAG data is not compacted and therefore will not appear on this tape.

The DD card necessary to read this tape is:

```
//ddname DD UNIT=(9TRACK,,DEFER),LABEL=(,SL),DISP=SHR,
//       DCB=(RECFM=VB,LRECL=4228,BLKSIZE=18260,DEN=4),
//       DSN=VOYAGER.CONJOINT.MAG.PLS,VOL=SER=xxxxxx
```

Each logical record consists of two or more parts. The following diagrams show the different record types and the different segments in each.

ENG - Engineering

Header 32 words	Selected Engineering Data 2 to 240 words

LFM - Magnetometer

Header 32 words	MAG Data 496 words	SEDR 40 words

M - Proton Mode

Header 32 words	Output Data 150 words	SEDR 50 words	Raw Data 256 words	Overlap Variable

L - Proton Mode

Header	Output Data	SEDR	Raw Data
32 words	150 words	50 words	32 words

E1/E2 - Electron Mode

Header	Output Data	SEDR	Raw Data
32 words	80 words	50 words	8 words

Because of the variable length of each record, a word has been added to each record header block to allow the use of FORTRAN in reading this tape. The last halfword of the block contains the count of the number of words remaining in the logical record.

TABLE

MAGNETIC FIELD EXPERIMENT EFFECTIVE SAMPLE OUTPUT PERIOD

All columns are LFM only except for the last.

FORMAT		CR-1	CR-2	CR-3	CR-4	CR-5	CR-6	CS-3	HFM
TYPE		DR	AVE	AVE	DIFF	DM	DM	DIFF	DR
STATUS PERIOD (SEC)		9.6	9.6	9.6	9.6	48.	288.	4.8	4.8
DATA OUTPUT PERIOD (SEC)	P	.06	.12	.24	.30	.24	1.92	.06	.60
	S	.06	.24	.96	2.4	.96	3.84	.12	.60
FULL WORD PERIOD (SEC)	P	.06	.12	.24	4.8	4.8	57.6	.30	.60
	S	.06	.24	.96	9.60	9.60	57.6	.60	.60
DATA WORDS PER DATA BLOCK	P	160	80	40	32	200	150	80	8
	S	160	40	10	4	50	75	40	8
FULL WORDS PER DATA BLOCK	P	160	80	40	2	10	5	16	8
	S	160	40	10	1	5	5	8	8
SAMPLES PER FULL WORD	P	1	1	1	16	20	30	5	1
	S	1	1	1	4	10	15	5	1

P = PRIMARY MAG (one sensor only)
S = Secondary MAG (one sensor only)

DR = Direct Readout
AVE = Averaging
DIFF = 6 bit differencing of averaged or direct readout data
DM = 2 bit deltamodulation of averaged data

This table represents only one sensor of a vector magnetometer output.

Common Record Header Block

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	A*4	Data identifier: "ENG ", "LFM ", "M ", "L ", "E1 ", "E2 ", "HDR1", "HDR3"
2	A*4	Telemetry format
3	A*4	s/c id: "FLT1" or "FLT2"
4	I*2	Year of data - 1900 (time tag for beginning of data block)
	I*2	Day of year (Jan 1 = 1)
5	I*2	Hour of day (0-23)
	I*2	Minute of hour (0-59)
6	I*2	Second of minute (0-59)
	I*2	Millisecond of second (0-999)
7-8	R*8	Decimal day of year of data (Jan 1 = 0)
9-10	R*8	Decimal day count since 20AUG77
11	A*4	Type of time: SCET or ERT
12	R*4	Time period of this data block in seconds
13	I*2	2**16 seq counter of data at time of telemetry readout (increments once in 48 min). This field must be interpreted as an unsigned integer.
	I*2	Modulo 60 seq counter of data readout (increments once in 48 sec)
14	I*2	Line counter of data readout (1-800) (increments once in 60 ms)
	I*2	SPARE
15	Z*4	Status word
16	Z*4	Command
17	I*2	Data identifier: LFM=1, HFM=2, M=3, E1=4, L=5, E2=6, ENG=7, HDR1=8, HDR3=10
	I*2	Data rate: GS3=0, CR1=1, CR2=2, CR3=3, CR4=4, CR5A=5, CR6A=6, CR6B=7, CR5B=8
18		SPARE
19-20	A*8	A character flag which indicates software or s/c hardware intervention reducing confidence in data
21-29		SPARE
30-31	4(I*2)	# of primary data words, # of secondary data words, # of primary full words, # of secondary full words (LFM only)
32	I*2	Record number on tape
	I*2	Number of words remaining in logical record

RELATIVE WORD	TYPE*LEN	DESCRIPTION
	--------	48 sec av (ROTATED) --------
1	R*4	F1: average of 9.6 sec norms in gammas
2	R*4	F2: norm of (B1,B2,B3) in gammas
3	R*4	DELTA: arsin(B3/F2) in degrees
4	R*4	LAMBDA: 180 - atan(B2,-B1) in degrees
5	R*4	B1: average of first 9.6 sec component in gammas
6	R*4	B2: average of second 9.6 sec component in gammas
7	R*4	B3: average of third 9.6 sec component in gammas
8-10	3(R*4)	RMS: rms vector in gammas
11	I*4	N: number of 9.6 sec avs that make up this average (le 5)
	--------	9.6 sec av (ROTATED) --------
12-16	5(R*4)	F1: averages of 1.92 sec norms in gammas
17-21	5(R*4)	F2: norms of (B1,B2,B3) in gammas
22-26	5(R*4)	DELTA: arsin(B3/F2) in degrees
27-31	5(R*4)	LAMBDA: 180 - atan(B2,-B1) in degrees
32-36	5(R*4)	B1: averages of first 1.92 sec component in gammas
37-41	5(R*4)	B2: averages of second 1.92 sec component in gammas
42-46	5(R*4)	B3: averages of third 1.92 sec component in gammas
47-61	15(R*4)	RMS: rms vectors in gammas (3 X 5)
62-66	5(I*4)	N: Number of 1.92 sec avs that make up this average (le 5)
	--------	1.92 sec av (ROTATED) --------
67-91	25(R*4)	F1: averages of detail point norms in gammas
92-116	25(R*4)	F2: norms of (B1,B2,B3) in gammas
117-141	25(R*4)	DELTA: arsin(B3/F2) in degrees
142-166	25(R*4)	LAMBDA: 180 - atan(B2,-B1) in degrees
167-191	25(R*4)	B1: averages of first detail component in gammas
192-216	25(R*4)	B2: averages of second detail component in gammas
217-241	25(R*4)	B3: averages of third detail component in gammas

LFM Data Area

242-316	75(R*4)	RMS: PAYLOAD rms vectors in gammas (3 X 25)
317-341	25(I*4)	N: number of detail points that make up this average
-------- s/c field averages (PAYLOAD) --------		
342-488		SPARE
489-491	3(R*4)	RMS: vector rms in gammas
492	I*4	NSC: number of averages in 48 secs
493	R*4	SCX: average of first field component in gammas
494	R*4	SCY: average of second field component in gammas
495	R*4	SXZ: average of third field component in gammas
496	R*4	SCF: norm of (SCX,SCY,SCZ) in gammas

Note: For Jupiter System III and Saturn Longitude System, (B1,B2,B3) are Spherical coordinates (Br,Btheta,Bphi) while the angles DELTA and LAMBDA are derived from Cartesian coordinates (Bx,By,Bz).

Engineering Data Area

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	I*2	Deck (Eng code 620-672)
	I*2	Value of ENG
2	R*4	"read-out" time of data in seconds past time on record header block
3-240		repeat words 1 and 2 for each new set

Since only engineering parameters which change are entered into the record, the record is of variable length.

SEDR Data Block

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1-2	R*8	TN: epicday of navigation block "closest" to data
3-4	R*8	TP: epicday of pointing vector block "closest" to data
5-10	R*4	Spacecraft relative position vector and velocity vector in HG: Inertial Sun Equator System (AU,km/sec). Time tag is TN. S3: Jupiter Vernal Equinox System (Jupiter radii,km/sec) Time tag is TN. L1: Saturn Vernal Equinox System (Saturn radii,km/sec) Time tag is TN.
11	R*4	Spacecraft distance from HG: Sun in AU. Time tag is TN. S3: Jupiter in Jupiter radii. Time tag is TN. L1: Saturn in Saturn radii. Time tag is TN.
12-13	R*4	Spacecraft relative longitude & latitude in radians in HG: Inertial Sun Equator System. Time tag is TN. S3: Jupiter latitude,Jupiter System III longitude. Time tag is TN. L1: Saturn latitude,Saturn Longitude System longitude. Time tag is TN. Note 0<=longitude<2*pi and -pi/2<latitude<=+pi/2
14-22	R*4	HG: Matrix to rotate data from Inertial Sun Equator System to Inertial Heliographic System. Time tag is TN. S3: Matrix to rotate data from Jupiter System III Cartesian to Jupiter System III Spherical. Time tag is DT. L1: Matrix to rotate data from Saturn Longitude System Cartesian to Saturn Longitude System Spherical. Time tag is DT.
23-31	R*4	HG: Matrix to rotate data from Inertial Heliographic System to Earth-Orbit-True System. Time tag is TN. S3: Matrix to rotate data from payload to Jupiter System III Cartesian. Time tag is DT. L1: Matrix to rotate data from payload to Saturn Longitude System Cartesian. Time tag is DT.
32-40	R*4	HG: Matrix to rotate data from payload

to Inertial Heliographic System. Time tag is DT.

S3: Matrix to rotate data from payload to Jupiter System III Spherical. Time tag is DT.

L1: Matrix to rotate data from payload to Saturn Longitude System Spherical. Time tag is DT.

41-50 SPARE

Matrices are left multiplying with elements in the order:

$$\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$$

Time tag TN is relative words 1-2 above. Time tag DT is record header time plus 1/2 the length of the data record. When MAG(28) switch is on and the record is LFM, the time tag for relative words 32-40 above is record header time plus 47.04 seconds.

Coordinates: HG= (BR,BT,BN); S3 or L1 Spherical= (Br,Btheta,Bphi); S3 or L1 Cartesian= (Bx,By,Bz).

Description of MJS summary tape (and MAG detail tape) HDR1 records at beginning and end of tape(s).

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	A*4	"HDR1"
2	A*4	Telemetry format
3	A*4	s/c id: "FLT1" or "FLT2"
4	I*2	Year of data - 1900 (from first data record)
	I*2	Day of year of data
5	I*2	Hour of day of data
	I*2	Minute of day of data
6	I*2	Second of minute of data
	I*2	Millisecond of second of data
7	I*4	Year of this run
8	I*4	Calendar day of year of this run
9	A*4	Month of this run
10	I*4	Day of month of this run
11-12	A*8	Run type: "CRUISE" or "ENCOUNTR"
13	A*4	Coordinate system (not on detail tape)
14-16		SPARE
17	I*2	Data identifier=8 (not on detail tape)
	I*2	SPARE
18-31		SPARE
32	I*2	Record number on tape
	I*2	Number of words remaining in logical record
33-52	10(A*8)	List of mounted EDR volume serial numbers
53-64	6(A*8)	List of mounted SEDR volume serial numbers
65-66	A*8	Volume serial number of summary tape
67-68	A*8	Volume serial number of MAG detail tape
69-76	32(L*1)	System switching vectors
77-84	32(L*1)	MAG switching vectors
85-92	32(L*1)	PLS switching vectors
93-94	A*8	Name of zeroes
95-96	A*8	Name of sensitivities
97-98	A*8	Name of calibrations

99-100	SPARE

NOTE: Some fields may be incomplete when this record is at the beginning of the tape.

Description of MJS summary tape HDR3 records to be placed after each HDR1 record.

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	A*4	"HDR3"
2-3		SPARE
4	I*2	Year of data - 1900 (from first data record)
	I*2	Day of year of data
5	I*2	Hour of day of data
	I*2	Minute of day of data
6	I*2	Second of minute of data
	I*2	Millisecond of second of data
7-16		SPARE
17	I*2	Data identifier=10
	I*2	SPARE
18-31		SPARE
32	I*2	Record number on tape
	I*2	Number of words remaining in logical record
33-1056	A*4096	Contents of PLCONS common block

DESCRIPTION OF "ANSWER" (ANS) ARRAY

WORD	QUANTITY	MNEMONIC	TYPE	DEFINITION	UNITS	SET BY
1 a)			I*2	number of words in ANS array		many
b)		NTALLY		tally of the calls to PLSANL		PLSANL
2 a)		IPK (4)	I*2	peak channel number sensor A		KNTCUR
b)				" " " " B		
3 a)			I*2	" " " " C		
b)				" " " " D		
4			R*4	delta time from start of mode to peak	sec	KNTCUR
5	B_x	BX	R*4	components of B field in spacecraft coordinates (x,y,z)	γ	GETFLD
6	B_y	BY	"			
7	B_z	BZ	"			
8	$\|B\|$	BMAG	R*4	square root of sum of squared average components	γ	GETFLD
9		F2	R*4	average of $(B_x^2 + B_y^2 + B_z^2)^{1/2}$	γ	GETFLD
10		RMS (3)	R*4	vector RMS of B field, spacecraft coordinates	γ	GETFLD
11						
12						
13		NA	I*4	number of MAG samples in this average (0 if bad data)		GETFLD
14			R*4	delta time from peak to mag field average	sec	GETFLD
15			R*4	time period of field average	sec	GETFLD

MC1010/12 (10/23/80)

---------- Moment Calculations ----------

Moments usually taken over 8 channels above peak and 12 below. Stopped at 3 times noise level or saturation see items 16 through 19.

16	J_A^{mom}	JACUPMOM	R*4	number of channels used in moment calculation, cup A	#	PRANAL
17	J_B^{mom}	JBCUPMOM		B		
18	J_C^{mom}	JCCUPMOM		C		
19	J_D^{mom}	JDCUPMOM		D		
20	n_A	NACUP	R*4	density from moments, for each cup	$\#/cm^3$	PRANAL MOMENT
21	n_B	NBCUP				
22	n_C	NCCUP				
23	n_D	NDCUP				
24	V_{An}	VACUPN	R*4	velocity component along normal of each cup	km/sec	PRANAL MOMENT
25	V_{Bn}	VBCUPN				
26	V_{Cn}	VCCUPN				
27	V_{Dn}	VDCUPN				
28	V_x^{mom}	VXMOM	R*4	velocity from moments, spacecraft coordinates x,y,z (i.e. no aberration correction)	km/sec	PRANAL
29	V_y^{mom}	VYMOM				
30	V_z^{mom}	VZMOM				
31	$\lvert\vec{V}\rvert$	VMAG	R*4	velocity from moments, spacecraft R, θ, ϕ	km/sec	PRANAL
32	θ_{mom}	THETAMOM				
33	ϕ_{mom}	PHIMOM				
34	W_{An}	WACUPN	R*4	thermal speed from moments, for each cup	km/sec	PRANAL MOMENT
35	W_{Bn}	WBCUPN				

36	W_{Cn}	WCCUPN				
37	W_{Dn}	WDCUPN				
38	$\bar{n}_{mom}$	NBARMOM	R*4	average density from moments	#/cm^3	PRANAL
39	δ_n	DN	R*4	density criterion (no transparency correction)		
40	W_{mom}	WMOM	R*4	thermal speed from moment (reconstructed using field)	km/sec	PRANAL MOMENT
41	A	A1P	R*4	aniostropy of proton thermal speed (moments), W_{par}/W_{perp}		PRANAL
42	χ^2_w	CHI2W	R*4	cost function (normalized square of residuals) for thermal speed fit by PARPER		PRANAL/ (PARPER)
43	q_A	QACUPMOM	R*4	heat flux from moments for each cup	km/sec	PRANAL MOMENT
44	q_B	QBCUPMOM				
45	q_C	QCCUPMOM				
46	q_D	QDCUPMOM				
47	$q_{\parallel}$	QPAR	R*4	Q parallel + 5*Q perpendicular again reconstructed and unreliable		PARPER/ PRANAL
48	χ^2_q	CHI2Q	R*4	normalized square residuals for heat flux		PRANAL

---------- Fit Calculations ----------

There are several fitting options; the default is an anisotropic proton and an isotropic alpha maxwellian. Items 49 through 63 summarize the results of the fitting procedure. The quantities are averages over the appropriate peaks weighted by the number density of the peaks.

49	V_x^{fit}	VXBARPFT	R*4	velocity of protons from fit routine spacecraft x,y,z	km/sec	PRANAL/ MJSFIT
50	V_y^{fit}	VYBARPFT				
51	V_z^{fit}	VZBARPFT				
52	$\bar{n}^{fit}$	NBARPFT	R*4	density of protons from fit	#/cc	PRANAL/ MJSFIT

53	$\bar{W}^{fit}$	WBARPFT	R*4	thermal width of protons from fit, averaged	km/sec	PRANAL/ MJSFIT
54	$\bar{A}^{fit}$	ABARPFT	R*4	anisotropy of protons from fit		PRANAL/ MJSFIT
55	$\bar{q}^{fit}$	QBARPFT	R*4	heat flux of protons from fit, normalized		PRANAL/ MJSFIT
56	V_x^{fit}	VXBARAFT	R*4	velocity of alphas from fit, spacecraft x,y,z	km/sec	PRANAL/
57	V_y^{fit}	VYBARAFT				
58	V_z^{fit}	VZBARAFT				
59	$\bar{n}^{fit}$	NBARAFT	R*4	density of alphas from fit	#/cc	PRANAL/ MJSFIT
60	$\bar{W}^{fit}$	WBARAFT	R*4	thermal width of alphas from fit	km/sec	PRANAL/ MJSFIT
61	$\bar{A}^{fit}$	ABARAFT	R*4	anisotropy of alphas from fit		PRANAL/ MJSFIT
62	$\bar{q}^{fit}$	QBARAFT	R*	heat flux of alphas from fit, normalized		PRANAL/ MJSFIT
63	$\delta V_{\alpha-p}$	DVAMPFT	R*4	delta velocity between alphas and protons from fit	km/sec	PRANAL/ MJSFIT

---------- fit, information on first peak ----------

64	V_x^{1p}	VS1P	R*4	velocity of first proton peak, spacecraft x,y,z	km/sec	PRANAL MJSFIT
65	V_y^{1p}	VY1P				
66	V_z^{1p}	VZ1P				
67	n^{1p}	N1P	R*4	density of first proton peak	#/cm^3	PRANAL/ MJSFIT
68	$W_{\parallel}^{1p}$	WPAR1P	R*	thermal width parallel to B field for first proton bi-maxwellian	km/sec	PRANAL/ MJSFIT
69	$W_{\perp}^{1p}$	WPER1P	R*4	thermal width perpendicular to B field for first proton bi-maxwellian	km/sec	PRANAL/ MJSFIT

				fit, information on second peak		
70	δV^{2p}	DV2P	R*4	difference in bulk velocity between first and second proton (along B required)	km/sec	PRANAL/ MJSFIT
71	n^{2p}	N2P	R*4	density of second proton fit	#/cc	PRANAL/ MJSFIT
72	$W_{\parallel}^{2p}$	WPAR2P	R*4	thermal width of second proton maxwellian parallel to B field	km/sec	PRANAL/ MJSFIT
73	$W_{\perp}^{2p}$	WPER2P	R*4	thermal width of second proton; maxwellian; perpendicular to B field	km/sec	PRANAL/ MJSFIT
				fit, information on first alpha peak		
74	$\delta V^{1\alpha}$	DV1A	R*4	velocity difference between first proton and first alpha,	km/sec	PRANAL/ MJSFIT
75	$n^{1\alpha}$	N1A	R*4	density of first alpha,	#/cc	PRANAL/ MJSFIT
76	$W_{\parallel}^{1\alpha}$	WPAR1A	R*4	thermal width of first alpha, parallel to B	km/sec	PRANAL/ MJSFIT
77	$W_{\perp}^{1\alpha}$	WPER1A	R*4	thermal width of first alpha, perpendicular to B	km/sec	PRANAL/ MJSFIT
				fit information on second alpha peak		
78	$\delta V^{2\alpha}$	DV2A	R*4	velocity difference between second alpha and first proton,	km/sec	PRANAL/ MJSFIT
79	$n^{2\alpha}$	N2A	R*4	density of second alpha	#/cc	PRANAL/ MJSFIT
80	$W_{\parallel}^{2\alpha}$	WPAR2A	R*4	thermal width of second alpha parallel to B field	km/sec	PRANAL/ MJSFIT
81	$W_{\perp}^{2\alpha}$	WPER2A	R*4	thermal width of second alpha perpendicular to B field	km/sec	
82	$\mathrm{Log}_{10}\chi^2$	LOGHI2	R*4	$\log_{10}$ of cost function (sum of squares of residuals)		

----------general information----------						
83	$Log_{10}x^2ext$	LOGCHI2E	R*4	log_{10} of cost function (sum of squares of residuals over all data)		
84	ICALL	ICALL	R*4	number of iterations performed by fit routine		
85	IQUAL	IQUAL	R*4	related to reason for termination of fit procedure		
86	J_A^{fit}	JACUPFT	R*4	number of channels from each cup used in fit		
87	J_B^{fit}	JBCUPFT				
88	J_C^{fit}	JCCUPFT				
89	IXCEL	IXCEL	R*4	number of saturated channels		
90	t_1	T1	R*4	transparency correction (due to angle) for each main cup		PRANAL
91	t_2	T2				
92	t_3	T3				
----------summary of analysis with aberration corrections made to velocities----------						
93	n_1^{cor}	N1COR	R*4	moment densities corrected for transparencies	#/cc	PRANAL
94	n_2^{cor}	N2COR				
95	n_3^{cor}	N3COR				
96	B_R	BR	R*4	B field in RTN coordinates	γ	
97	B_T	BT				
98	B_N	BN				
99	V_R^{mom}	VRMOM	R*4	moment proton velocities in RTN coordinates	km/sec	
100	V_T^{mom}	VTMOM				
101	V_N^{mom}	VNMOM				
102	$\lvert\vec{V}\rvert^{mom}$	VMAGMOM	R*4	moment proton speed	km/sec	

103	NS_{ζ}^{mom}	NSANMOM		North-South angle of flow = ATAN2 $(VN, [VR^2 + VT^2]^{1/2})$	degrees
104	EW_{ζ}^{mom}	EWANMOM		East-West angle of flow = -ATAN2 (VT,VR)	degrees
105	V_R^{fit}	VRPFT	R*4	proton velocity in RTN coordinates, fit	km/sec
106	V_T^{fit}	VTPFT			
107	V_N^{fit}	VNPFT			
108	$\|V\|^{fit}$	VMAGPFT	R*4	proton speed, fit	km/sec
109	NS_{ζ}^{fit}	NSANPFT		flow angles, fit (defined as above)	degrees
110	EW_{ζ}^{fit}	EWANPFT			
111	V_R^{fit}	VRAFT	R*4	alpha velocity in RTN coordinates, fit	degrees
112	V_T^{fit}	VTAFT			
113	V_N^{fit}	VNAFT			
114	$\|V\|^{fit}$	VMAGAFT	R*4	alpha speed, fit	km/sec
115	NS_{ζ}^{fit}	NSANAFT		alpha flow angles, fit	
116	EW_{ζ}^{fit}	EWANAFT			
117	n_{α}^{mom}	NAMOM		alpha number density, moments	#/cm^3
118	W_{α}^{mom}	WAMOM		alpha thermal speed, moments	km/sec
119	$V_{x,\alpha}^{mom}$	VXAMOM		alpha velocity, moments, s/c coord (no abberation correction)	km/sec
120	$V_{y,\alpha}^{mom}$	VYAMOM			
121	$V_{z,\alpha}^{mom}$	VZAMOM			
122	$IP_{A\alpha}$	IPACUPA		pk channel for alpha in each cup (estimated--not useful)	
123	$IP_{B\alpha}$	IPBCUPA			

124	$IP_{C\alpha}$	IPBCUPA		
125	$NCHAN_p$	NESTCHP	estimate of # of channels from peak to 1/e of peak. derived from moment calculation	
126	$NCHAN_\alpha$	NESTCHA	ditto for alphas	
127	$\lvert \mathbf{V}_\alpha - \mathbf{V}_p \rvert^{mom}$	VAMPMOM	speed difference, not necessarily along B, moments	km/sec
128	$\measuredangle (\mathbf{V}_\alpha - \mathbf{V}_p, \mathbf{B})$	ANVAMPB	angle to B field	degrees
129	δn_α	DNA	density criterion for alphas	
130	$\cos(\hat{B}, \hat{n}_A)$	COSBACUP	cosines of angles between $\hat{B}$ and cup normals	
131	$\cos(\hat{B}, \hat{n}_B)$	COSBBCUP		
132	$\cos(\hat{B}, \hat{n}_C)$	COSBCCUP		
133	W_p^{mom}	WBARPMOM	estimate of thermal speed from moments: $(W_A^2 + W_B^2 + W_C^2)^{1/2}$	km/sec

D-78711
1/19/86 - 1/24/86
05G

RECORD 1 OF FILE 1
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year = 86
day = 19

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D-78714
1/23/86 - 1/25/86
05 H

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year = 86
day = 23

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