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dat          = aelb[0]
HELP, dat[0],/STRUCT
;;** Structure <18eb808>, 40 tags, length=76496, data length=76491, refs=2:
;; PROJECT_NAME   STRING   'Wind 3D Plasma'
;; DATA_NAME     STRING   'Eesa Low Burst'
;; UNITS_NAME     STRING   'Counts'
;; UNITS_PROCEDURE STRING   'convert_esa_units'
;; TIME           DOUBLE   9.5503867e+08
;; END_TIME       DOUBLE   9.5503867e+08
;; TRANGE         DOUBLE   Array[2]
;; INTEG_T        DOUBLE   3.1001518
;; DELTA_T        DOUBLE   3.1001518
;; MASS           DOUBLE   5.6856591e-06
;; GEOMFACTOR     DOUBLE   0.00039375000
;; INDEX          LONG     1
;; N_SAMPLES      LONG     1
;; SHIFT          BYTE     4
;; VALID          INT      1
;; SPIN           LONG     42506
;; NBINS          INT      88
;; NENERGY        INT      15
;; DACCODES       INT      Array[8, 15]
;; VOLTS          FLOAT    Array[8, 15]
;; DATA          FLOAT    Array[15, 88]
;; ENERGY        FLOAT    Array[15, 88]
;; DENERGY        FLOAT    Array[15, 88]
;; PHI            FLOAT    Array[15, 88]
;; DPHI           FLOAT    Array[15, 88]
;; THETA          FLOAT    Array[15, 88]
;; DTHETA         FLOAT    Array[15, 88]
;; BINS           BYTE     Array[15, 88]
;; DT             FLOAT    Array[15, 88]
;; GF             FLOAT    Array[15, 88]
;; BKGRATE        FLOAT    Array[15, 88]
;; DEADTIME       FLOAT    Array[15, 88]
;; DVOLUME        FLOAT    Array[15, 88]
;; DDATA          FLOAT    Array[15, 88]
;; MAGF           FLOAT    Array[3]
;; VSW            FLOAT    Array[3]
;; DOMEGA         FLOAT    Array[88]
;; SC_POT         FLOAT    5.41954
;; E_SHIFT        FLOAT    0.00000
;; COUNTS         FLOAT    Array[15, 88]

PRINT, ';;  '+time_string(dat[0].TIME[0],PREC=3)+' --  '+$
        time_string(dat[0].END_TIME[0],PREC=3)
;;  2000-04-06/16:31:06.799 -- 2000-04-06/16:31:09.900

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;; Get particle charge and/or energy shift
charge      = define_particle_charge(dat,E_SHIFT=e_shift)
IF ((N_ELEMENTS(e_shift) EQ 0) OR (SIZE(e_shift,/TYPE) LE 2)) THEN e_shift = 0e0
;; Shift energy accordingly
dat[0].ENERGY += e_shift[0]

;; Get spacecraft potential with sign altered by particle charge
str_element,dat,'SC_POT',scpot
test        = (N_ELEMENTS(scpot) EQ 0) OR (FINITE(scpot) EQ 0)
;; 0 < 0 (electrons), 0 > 0 (ions)
IF (test[0]) THEN scpot = 0e0 ELSE scpot = dat[0].SC_POT[0]*charge[0]

;; Make copies
dat0        = dat[0]
dat1        = dat[0]
dat1.ENERGY += scpot[0]
;; Kill negative values
bad1        = WHERE(dat1[0].ENERGY LE 0 OR FINITE(dat1[0].ENERGY) EQ 0,bd1)
IF (bd1[0] GT 0) THEN dat1[0].ENERGY[bad1] = 0
IF (bd1[0] GT 0) THEN dat1[0].DATA[bad1]   = 0
;; Convert units for one before removing SC potential and not other
dat0_df     = conv_units(dat0,'df')
dat1_df     = conv_units(dat1,'df')
;; Remove spacecraft potential from other VDF
dat0_df.ENERGY += scpot[0]
bad0        = WHERE(dat0_df[0].ENERGY LE 0 OR FINITE(dat0_df[0].ENERGY) EQ 0,bd0)
IF (bd0[0] GT 0) THEN dat0_df[0].ENERGY[bad0] = 0
IF (bd0[0] GT 0) THEN dat0_df[0].DATA[bad0]   = 0

;; Sum over DATA and compare
sum0        = TOTAL(dat0_df[0].DATA,/NAN)
sum1        = TOTAL(dat1_df[0].DATA,/NAN)
PRINT, ';; ',sum0[0],sum1[0]
;;      2.53430e-07  2.37927e-05

;; Check velocity moments
;;      Already removed SC potential
;;      --> force to zero for moment routine
mom0        = moments_3d_new(dat0_df[0],SC_POT=0e0)
mom1        = moments_3d_new(dat1_df[0],SC_POT=0e0)

```

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HELP, mom0[0],/STRUCT

```
;;** Structure <1bebe08>, 21 tags, length=192, data length=186, refs=2:
;;  TIME          DOUBLE          9.5503867e+08
;;  SC_POT         FLOAT           0.00000
;;  SC_CURRENT     FLOAT           2.09576e+09
;;  MAGF           FLOAT           Array[3]
;;  DENSITY        FLOAT           11.7969
;;  AVGTEMP        FLOAT           8.20631
;;  VTHERMAL       FLOAT           1699.02
;;  VELOCITY       FLOAT           Array[3]
;;  FLUX           FLOAT           Array[3]
;;  PTENS          FLOAT           Array[6]
;;  MFTENS         FLOAT           Array[6]
;;  EFLUX          FLOAT           Array[3]
;;  T3             FLOAT           Array[3]
;;  SYMM           FLOAT           Array[3]
;;  SYMM_THETA     FLOAT           -8.66532
;;  SYMM_PHI       FLOAT           302.317
;;  SYMM_ANG       FLOAT           8.30631
;;  MAGT3          FLOAT           Array[3]
;;  ERANGE         FLOAT           Array[2]
;;  MASS           FLOAT           5.68566e-06
;;  VALID          INT             1
```

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;; Compare Ne, Te, and V_Te
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```
PRINT, ';; ', mom0[0].DENSITY, mom0[0].AVGTEMP, mom0[0].VTHERMAL & $
```

```
PRINT, ';; ', mom1[0].DENSITY, mom1[0].AVGTEMP, mom1[0].VTHERMAL
```

```
;;      11.7969      8.20631      1699.02
;;      287.780      0.992368      590.828
```

```
;; Compare Ve
```

```
PRINT, ';; ', mom0[0].VELOCITY[0], mom0[0].VELOCITY[1], mom0[0].VELOCITY[2] & $
```

```
PRINT, ';; ', mom1[0].VELOCITY[0], mom1[0].VELOCITY[1], mom1[0].VELOCITY[2]
```

```
;;      -284.128      13.2897      -31.9889
;;      -33.2847      -11.7599      -12.8526
```

```
;; Compare T3
```

```
PRINT, ';; ', mom0[0].T3[0], mom0[0].T3[1], mom0[0].T3[2] & $
```

```
PRINT, ';; ', mom1[0].T3[0], mom1[0].T3[1], mom1[0].T3[2]
```

```
;;      7.68925      7.92297      9.00672
;;      0.971070      0.963878      1.04215
```

```
;; Compare MAGT3
```

```
PRINT, ';; ', mom0[0].MAGT3[0], mom0[0].MAGT3[1], mom0[0].MAGT3[2] & $
```

```
PRINT, ';; ', mom1[0].MAGT3[0], mom1[0].MAGT3[1], mom1[0].MAGT3[2]
```

```
;;      7.70867      7.92948      8.98079
;;      0.991111      0.970434      1.01556
```