SMM C/P 1989 DOY295 312 +/- 2 degrees

height = h + velocity*time   # data points =   4

height [solar radii]

6.00

5.50

5.00

4.50

4.00

3.50

3.00

2.50

2.00

1.50

1.00

Back of U-Shaped Structure
angular velocity=0.818E-05 [radians/sec]
      S=SMM   M=MK3   P=PMON

   SMM & MK3 - CORRECTED TIMES

Ø = Point not included in the fit

14:00   14:30   15:00   15:30   16:00
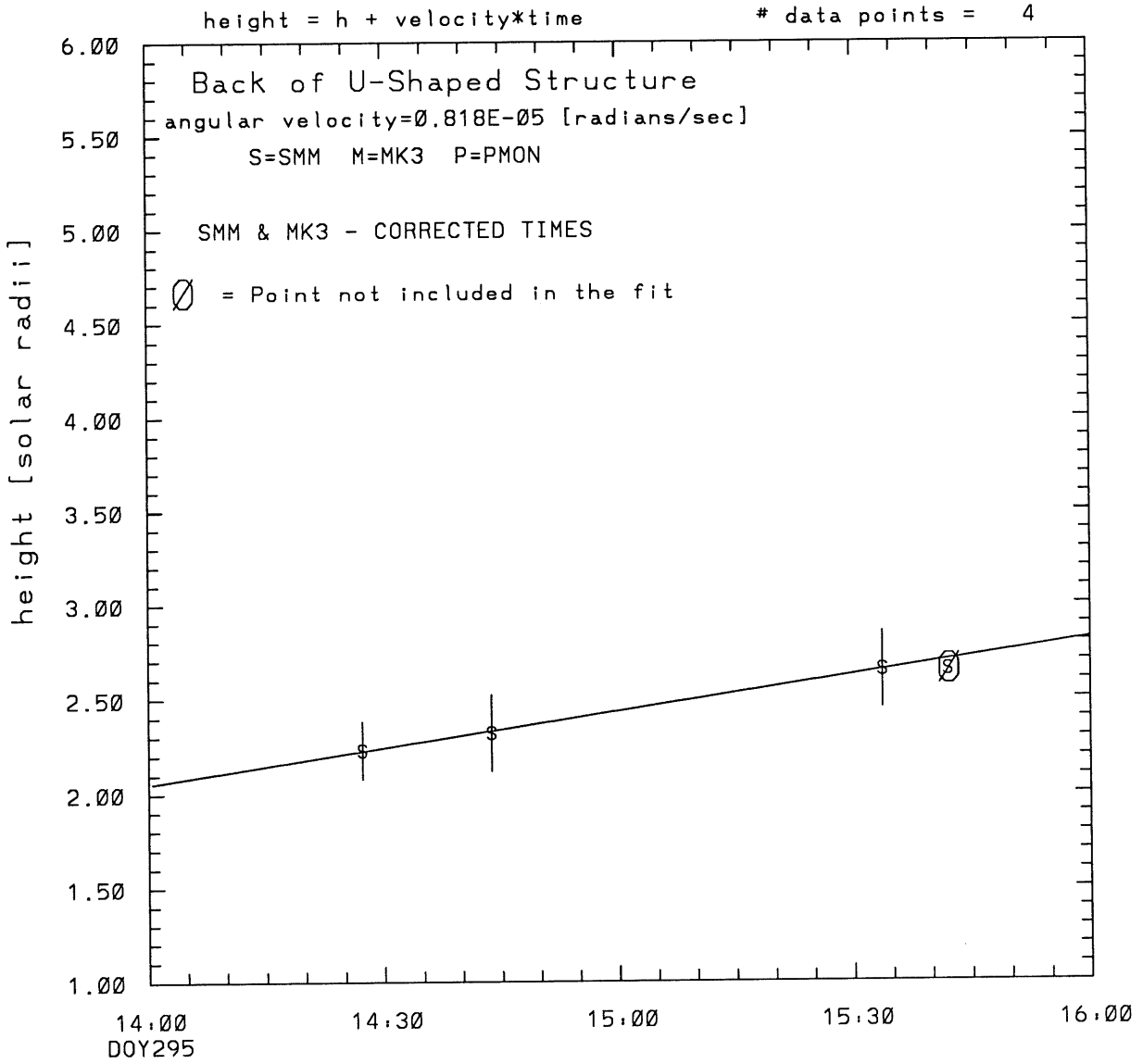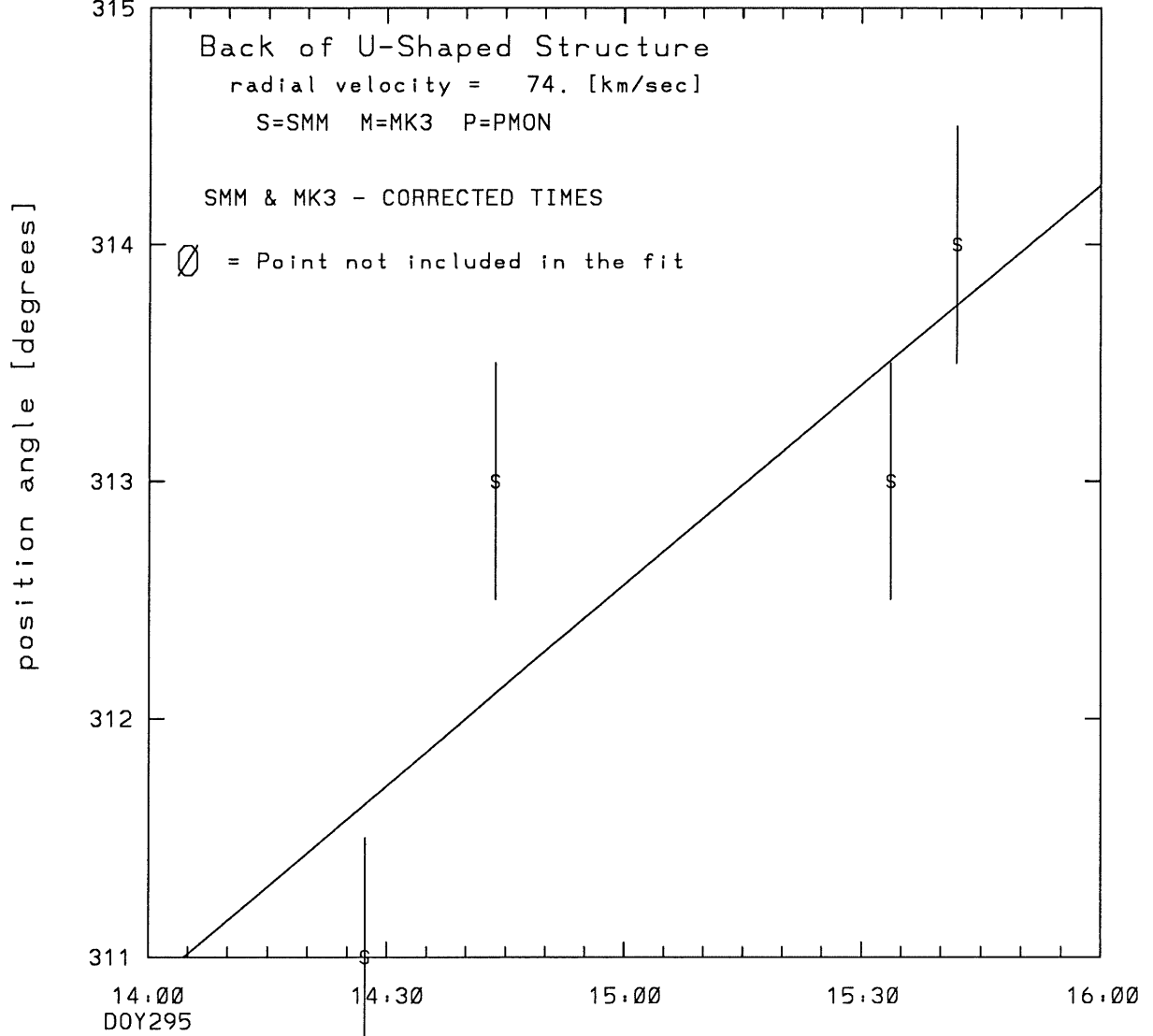DOY295

tstart=DOY295 11:16 +/-   1.4 [min.]
radial velocity=   74. +/-   2. [km/sec]

SMM C/P 1989 DOY295 312 +/- 2 degrees

angle= initial angle + angular velocity*time   # data points = 4

Back of U-Shaped Structure
    radial velocity = 74. [km/sec]
       S=SMM   M=MK3   P=PMON

SMM & MK3 - CORRECTED TIMES

$\emptyset$ = Point not included in the fit

position angle [degrees]

315
314
313
312
311

14:00
DOY295
14:30
15:00
15:30
16:00

tstart=DOY295 11:16 +/-   1.4 [min.]
angular velocity=0.818E-05 +/- 0.327E-05 [rad/sec]

SMM C/P   1989 DOY295   312 +/-   2 degrees
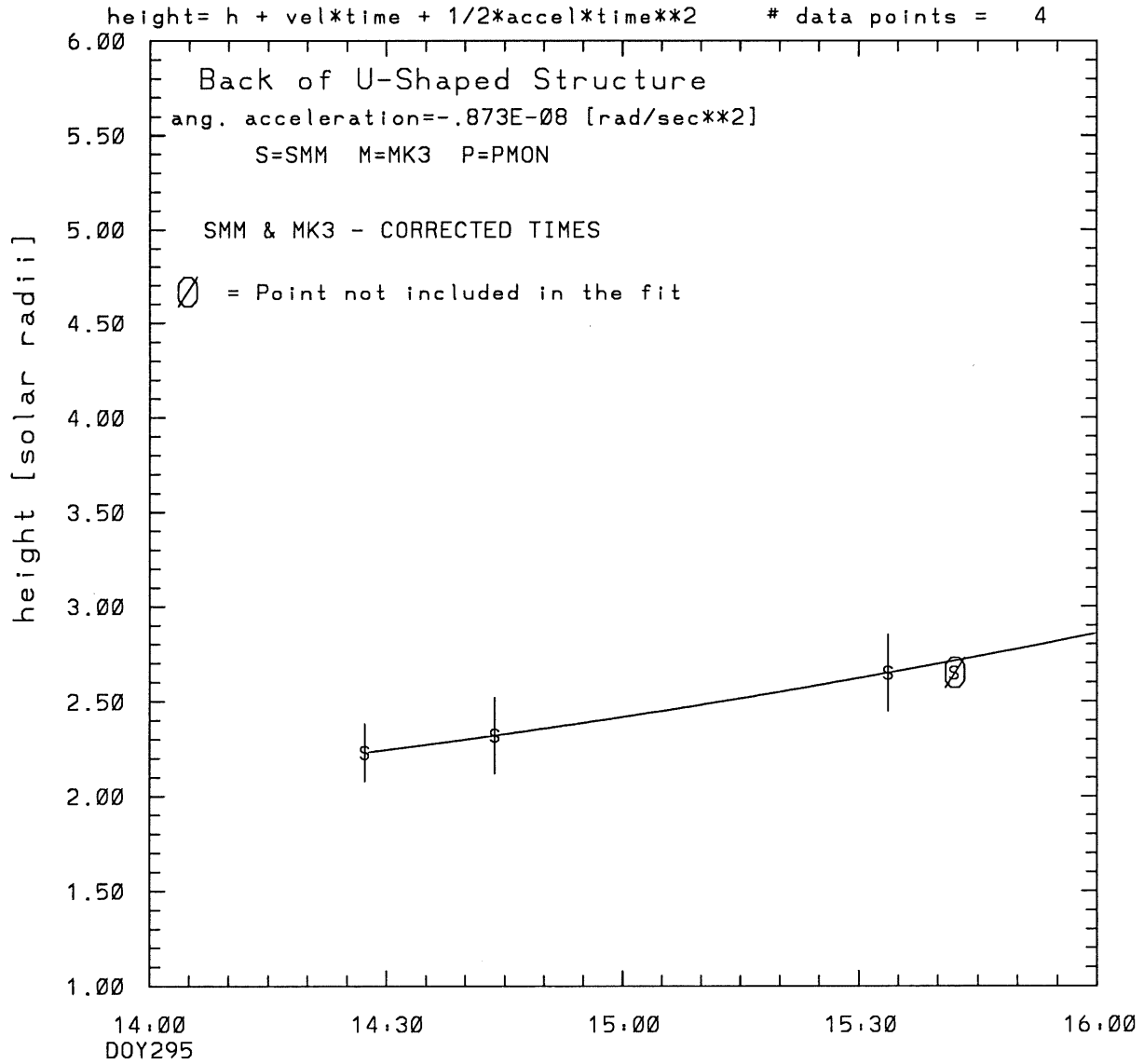
height= h + vel*time + 1/2*accel*time**2   # data points =   4

Back of U-Shaped Structure
ang. acceleration=-.873E-08 [rad/sec**2]
      S=SMM   M=MK3   P=PMON

  SMM & MK3 - CORRECTED TIMES

$\emptyset$ = Point not included in the fit

height [solar radii]

6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00

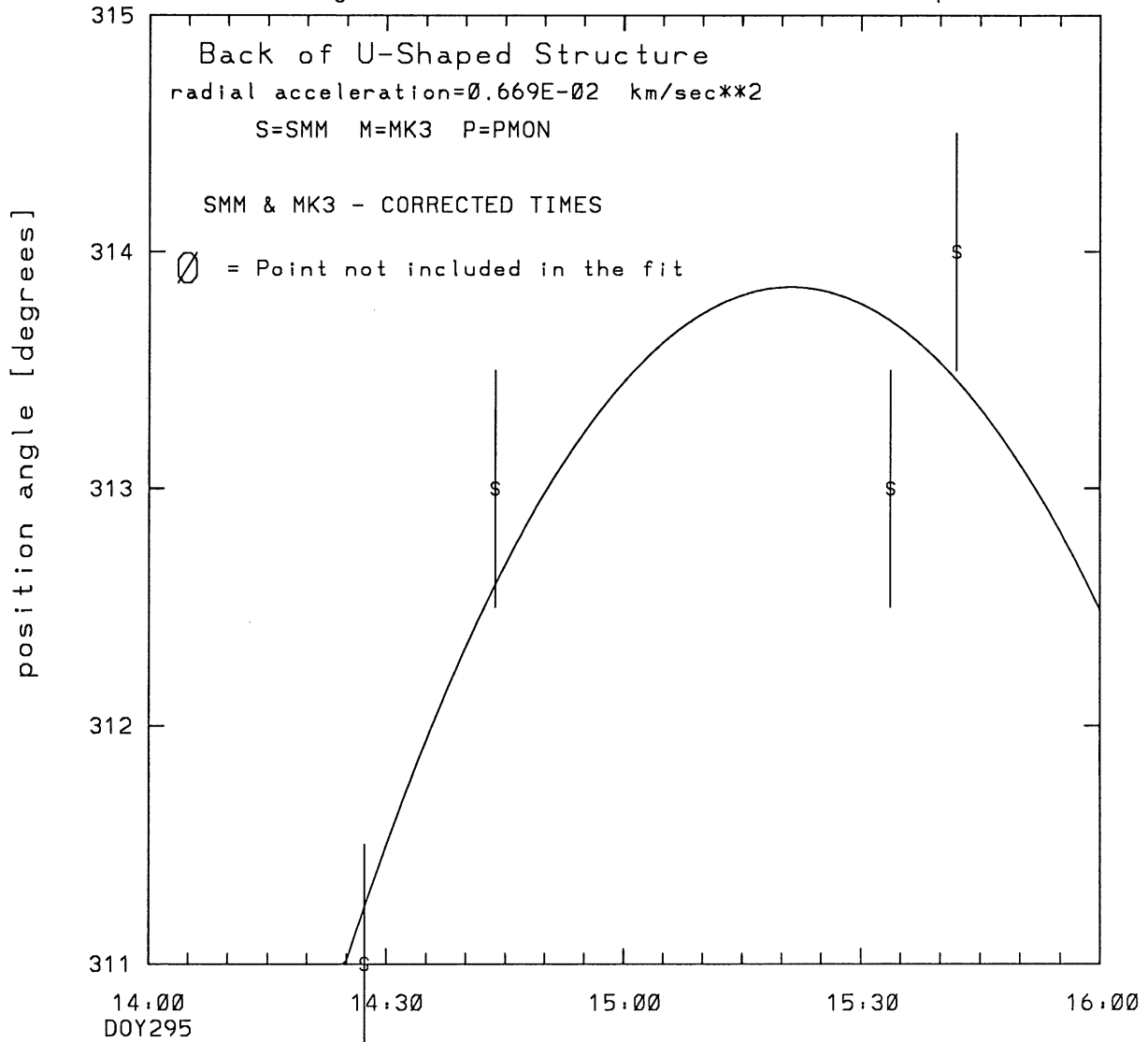14:00   14:30   15:00   15:30   16:00
DOY295

tstart=DOY295 11:58   from derivative=0
       Event begins at   1.84 Solar Radii
radial acceleration= 0.0067 +/-   0.0000 [km/sec**2]

SMM C/P 1989 DOY295   312 +/-   2 degrees

angle= initial angle + angular velocity*time
       + 1/2 angular acceleration*time**2   # data points =   4

Back of U-Shaped Structure
radial acceleration=0.669E-02 km/sec**2
     S=SMM   M=MK3   P=PMON

SMM & MK3 - CORRECTED TIMES

Ø = Point not included in the fit

position angle [degrees]

315
314
313
312
311

14:00   14:30   15:00   15:30   16:00
DOY295
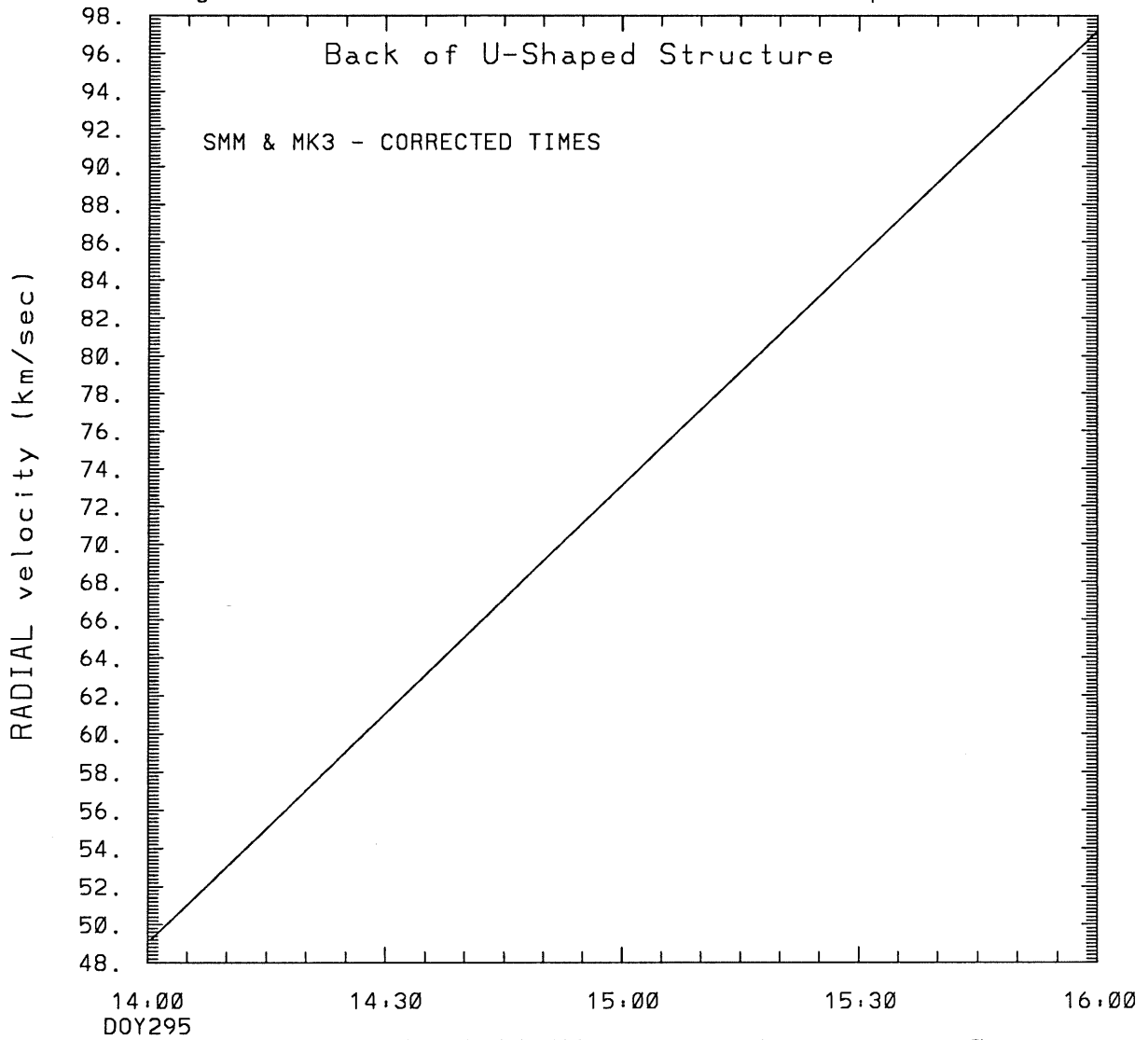
tstart=DOY295 11:58   from derivative=0
angular acceleration=-.873E-08 +/-0.862E-08 [rad/sec**2]

SMM C/P 1989 DOY295 312 +/- 2 degrees

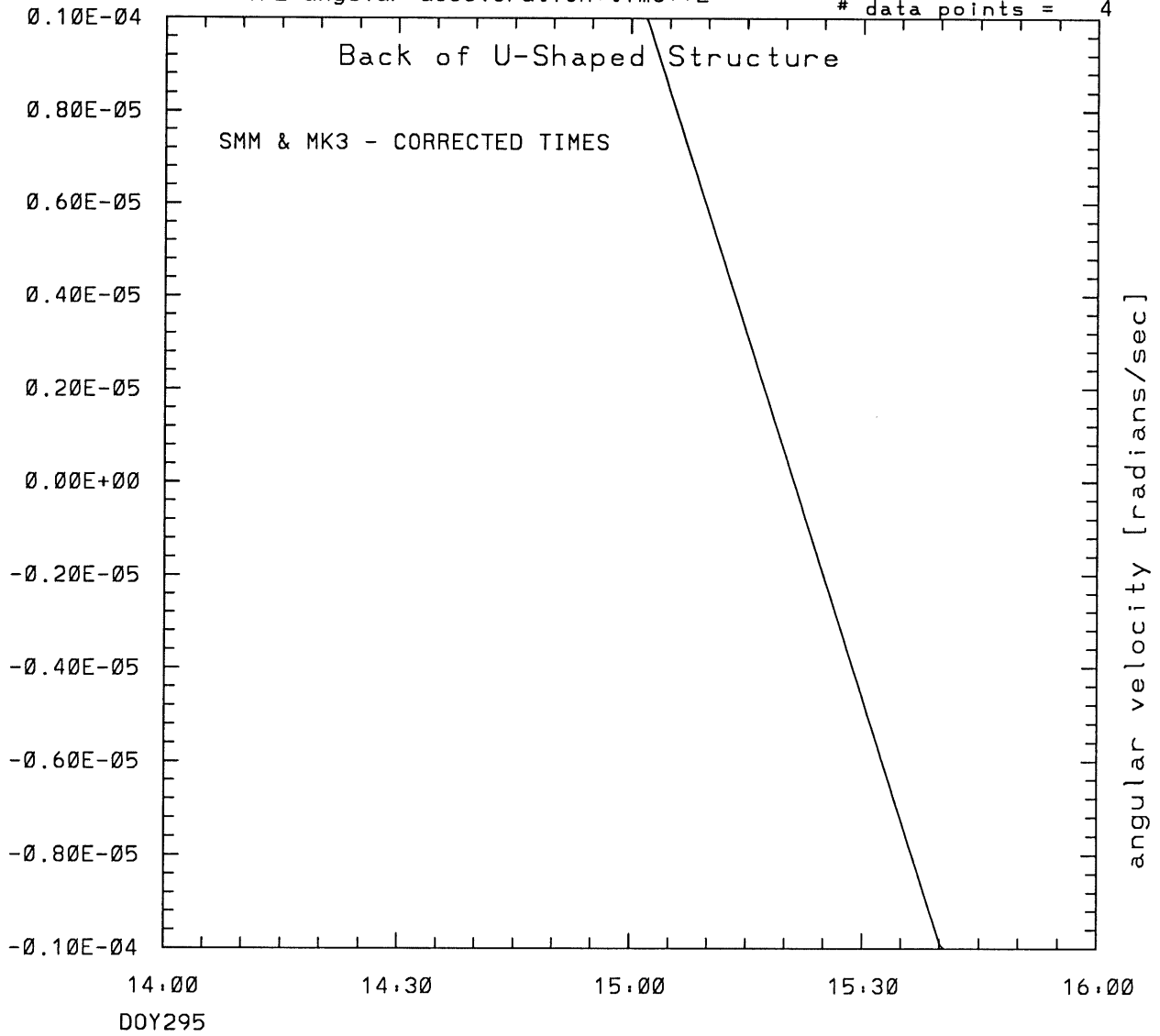height= h + vel*time + 1/2*accel*t   # data points =   4

Back of U-Shaped Structure

SMM & MK3 - CORRECTED TIMES

RADIAL velocity (km/sec)

98.
96.
94.
92.
90.
88.
86.
84.
82.
80.
78.
76.
74.
72.
70.
68.
66.
64.
62.
60.
58.
56.
54.
52.
50.
48.

14:00   14:30   15:00   15:30   16:00
DOY295

tstart=DOY295 11:58   from derivative=0
Event begins at   1.84 Solar Radii
radial acceleration=0.669E-02 km/sec**2

SMM C/P 1989 DOY295 312 +/- 2 degrees

angle= initial angle + angular velocity*time +
1/2 angular acceleration*time**2

data points =   4

Back of U-Shaped Structure

SMM & MK3 - CORRECTED TIMES

0.10E-04
0.80E-05
0.60E-05
0.40E-05
0.20E-05
0.00E+00
-0.20E-05
-0.40E-05
-0.60E-05
-0.80E-05
-0.10E-04

angular velocity [radians/sec]

14:00   14:30   15:00   15:30   16:00
DOY295

tstart=DOY295 11:58   from derivative=0
angular acceleration=-.873E-08 +/-
0.862E-08 [rad/sec**2]

1989 DOY 295

XRAY and OPTICAL DATA TOGETHER

STOP
Ret..

BEGIN: 22 OCT 89
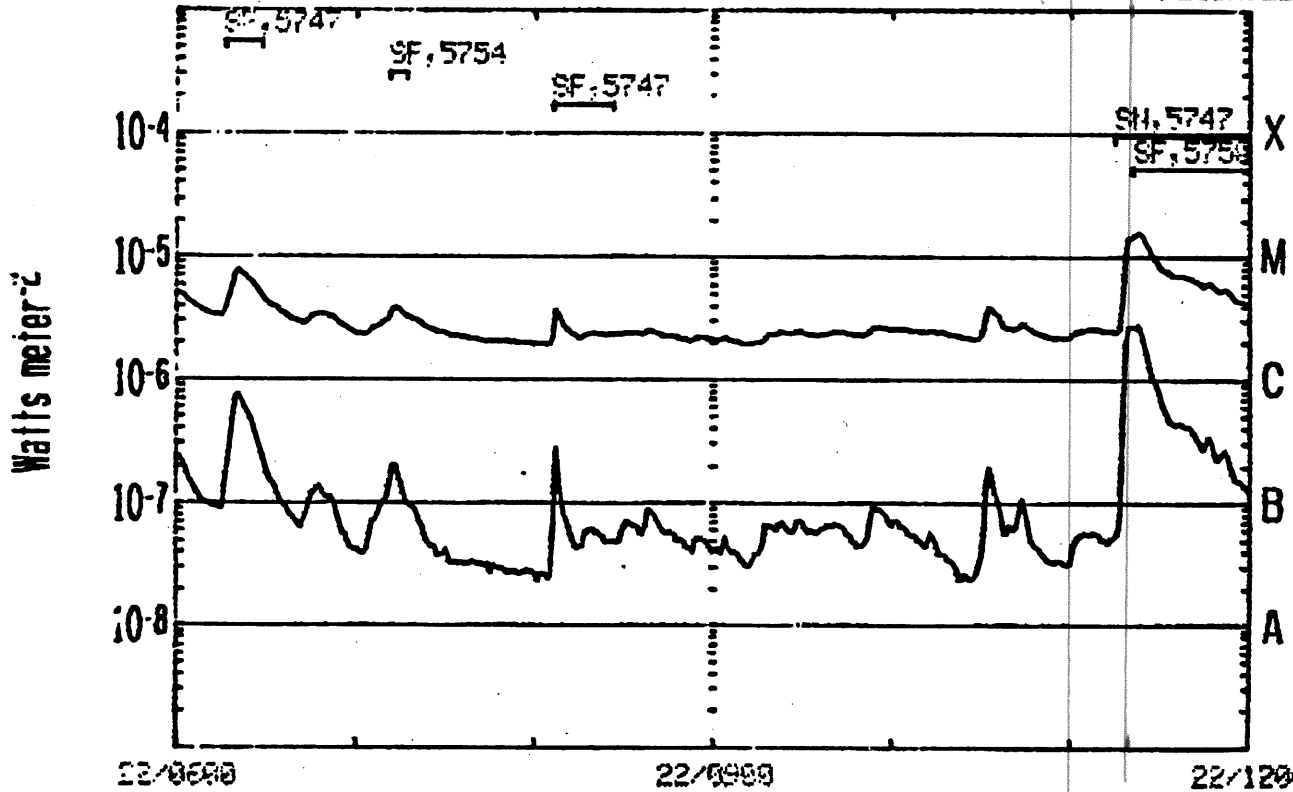
Back of Disconnection (center = 315°) [11:00] 1st order

↑ Back of Disconnection (OMITTING LAST DATA POINT) [11:19] 1st order

SF,5747

SF,5754

SF,5747

SF,5747

SH,5747

SF,5755

X — 10⁻⁴

M — 10⁻⁵

C — 10⁻⁶

B — 10⁻⁷

A — 10⁻⁸

Watts meter⁻²

GOES 6 1.0-8.0A

GOES 6 0.5-4.0A   OPTICAL FLARES

22/0600   22/0900   22/1200

SAA's
NIGHT

GOES-6 1 MIN DATA;   OPTICAL FLARE DUR, IMP, REGION

RUN: 1939UT
27 OCT 89

see next page
for 2ⁿᵈ order fits
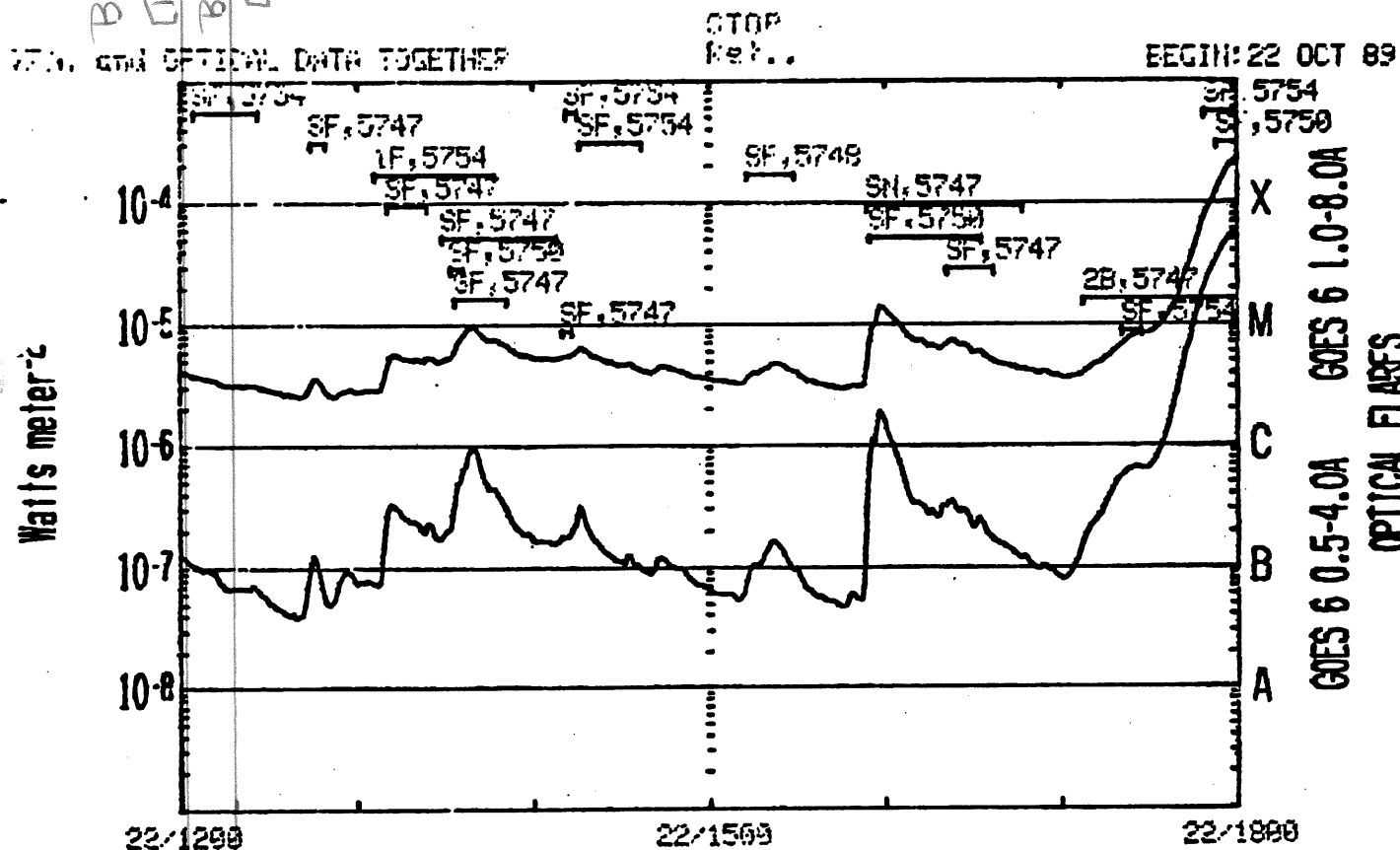
GOES-6 1 MIN DATA: OPTICAL FLARE DUR, IMP, REGION

```
**********************
 This is a 1 order run
**********************

*******
 INPUT:
*******

                                    error in        error in
 year doy     time     radii  radius       angle    angle     datatype
 1989 295   14:27:15   2.23 +/- 0.15     311.0 +/-  0.5       SMM
 1989 295   14:43:45   2.32 +/- 0.20     313.0 +/-  0.5       SMM
 1989 295   15:33:43   2.65 +/- 0.20     313.0 +/-  0.5       SMM
 1989 295   15:42: 0   2.65  -----      314.00 +/-  ----      SMM   THIS POINT WASN'T USE

*******************************************
 Structure being measured:
 Back of U-Shaped Structure
*******************************************

********
 OUTPUT:
********

START TIME:

 Event began at t = 0 + -0.166E+03 +/-  0.141E+01 [minutes]
 In more convenient units:
 Event began at DOY 295 11:16 +/-  0.141E+01 [minutes]

 Origin defined at DOY295 14: 0

RADIAL INFORMATION:

RADIAL VELOCITY =    74. +/-      2. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =     0.205E+01 +/-    0.738E-02 [solar radii]
 c(2) =     0.635E-02 +/-    0.131E-03 [radii/min]
 c(2) =     0.736E+02 +/-    0.152E+01 [km/sec]
 c(3) =     0.000E+00 +/-    0.000E+00 [radii/min**2]
 c(3) =     0.000E+00 +/-    0.000E+00 [km/sec**2]

 The computed ERRORS in coefficients [BEVINGTON] are:

                error in c(1)=  0.42083E-01 [radii] see Bevington pg. 114
                error in c(2)=  0.56947E-03 [radii/min] see Bevington pg. 114
ANGULAR INFORMATION:

ANGULAR VELOCITY =  0.8183E-05 +/-    0.3269E-05[radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

 a(1) = 311. +/-   1. [degrees]
 a(2) =     0.281E-01 +/-    0.112E-01 [degrees/min]
 a(2) =     0.818E-05 +/-    0.327E-05 [rad/sec]
 a(3) =     0.000E+00 +/-    0.000E+00 [degrees/min**2]
 a(3) =     0.000E+00 +/-    0.000E+00 [rad/sec**2]

The RADIAL velocity at 14:27 =    74. km/sec

The RADIAL velocity at 14:43 =    74. km/sec

The RADIAL velocity at 15:33 =    74. km/sec
```

The RADIAL velocity at 15:42 =   74. km/sec

****
 The following info is for estimating goodness of the fit
****

 Fit is ok [ier=1]

 Standard Deviation in the height = 0.22
 Standard Deviation in start time measurement =   0.319E+02
 Error in time =   0.80852E+01 using best fit method
 See Taylor Error Analysis [Univ of Colorado] pg.78

 Value of reduced Chi Squared returned from nllst2 = 0.520E-04
 Reduced Chi Squared = 0.513E-02
 Chi Squared = 0.103E-01
 The probability for exceeding chi square = 0.100E+01

 The correlation coefficient =   0.996E+00
 The probability that no LINEAR correlation exists between the variables =   0.4373]
 SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

```
**********************
 This is a 2 order run
**********************


*******
 INPUT:
*******


                                    error in          error in
     year doy     time     radii   radius     angle    angle   datatype
     1989 295  14:27:15   2.23 +/- 0.15    311.0 +/-  0.5      SMM
     1989 295  14:43:45   2.32 +/- 0.20    313.0 +/-  0.5      SMM
     1989 295  15:33:43   2.65 +/- 0.20    313.0 +/-  0.5      SMM
     1989 295  15:42: 0   2.65  -----    314.00 +/-  ----     SMM   THIS POINT WASN'T USEI


*******************************************
 Structure being measured:
 Back of U-Shaped Structure
*******************************************


********
 OUTPUT:
********


START TIME:

 tstart=DOY295 11:58 from derivative = 0
 Event begins at    1.84 Solar Radii
  Origin defined at DOY295 14: 0


RADIAL INFORMATION:

RADIAL ACCELERATION =  0.669E-02 +/-   0.920E-06  km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =      0.210E+01 +/-      0.701E-05 [solar radii]
 c(2) =      0.423E-02 +/-      0.293E-06 [radii/min]
 c(2) =      0.490E+02 +/-      0.340E-02 [km/sec]
 c(3) =      0.173E-04 +/-      0.238E-08 [radii/min**2]
 c(3) =      0.669E-02 +/-      0.920E-06 [km/sec**2]


 The computed ERRORS in coefficients [BEVINGTON] are:

    Approximate error in c(1) =  0.26770E+00 [radii] Bevington pg 154 (8-30)
          Exact error in c(1) =  0.69039E-05 [radii] Bevington pg 154 (8-28)
    Approximate error in c(2) =  0.10349E-01 [radii/min] Bevington pg 154 (8-30)
          Exact error in c(2) =  0.30454E-06 [radii/min] Bevington pg 154 (8-28)
    Approximate error in c(3) =  0.78632E-04 [radii/min**2] Bevington pg 154 (8-30)
          Exact error in c(3) =  0.24761E-08 [radii/min**2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= -0.8733E-08 +/-   0.8621E-08[radians/sec**2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

 a(1) = 308. +/-   3. [degrees]
 a(2) =     0.146E+00 +/-     0.117E+00 [degrees/min]
 a(2) =     0.425E-04 +/-     0.340E-04 [rad/sec]
 a(3) =    -0.901E-03 +/-     0.889E-03 [degrees/min**2]
 a(3) =    -0.873E-08 +/-     0.862E-08 [rad/sec**2]

The RADIAL velocity at 14:27 =    60. km/sec

The RADIAL velocity at 14:43 =    67. km/sec
```

The RADIAL velocity at 15:33 =   87. km/sec

The RADIAL velocity at 15:42 =   90. km/sec


```
***********************************************************
 The following info is for estimating goodness of the fit
***********************************************************
```

Fit is ok [ier=1]

Standard Deviation in the height = 0.22
Standard Deviation in start time measurement =   0.319E+02
Value of reduced Chi Squared returned from nllst2 = 0.296E-11
Reduced Chi Squared = 0.159E-01
Chi Squared = 0.159E-01
The probability for exceeding chi square = 0.100E+01

For a second order fit 3 correlation coefficients are given:
 (Using equation of motion: r = a + bt + at**2)
The correlation between the data and the term linear in time =   0.1022E+01
The correlation between the data and the time**2 term =   0.9704E+00
The correlation between the data and the complete equation of motion=0.1038E+01
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]