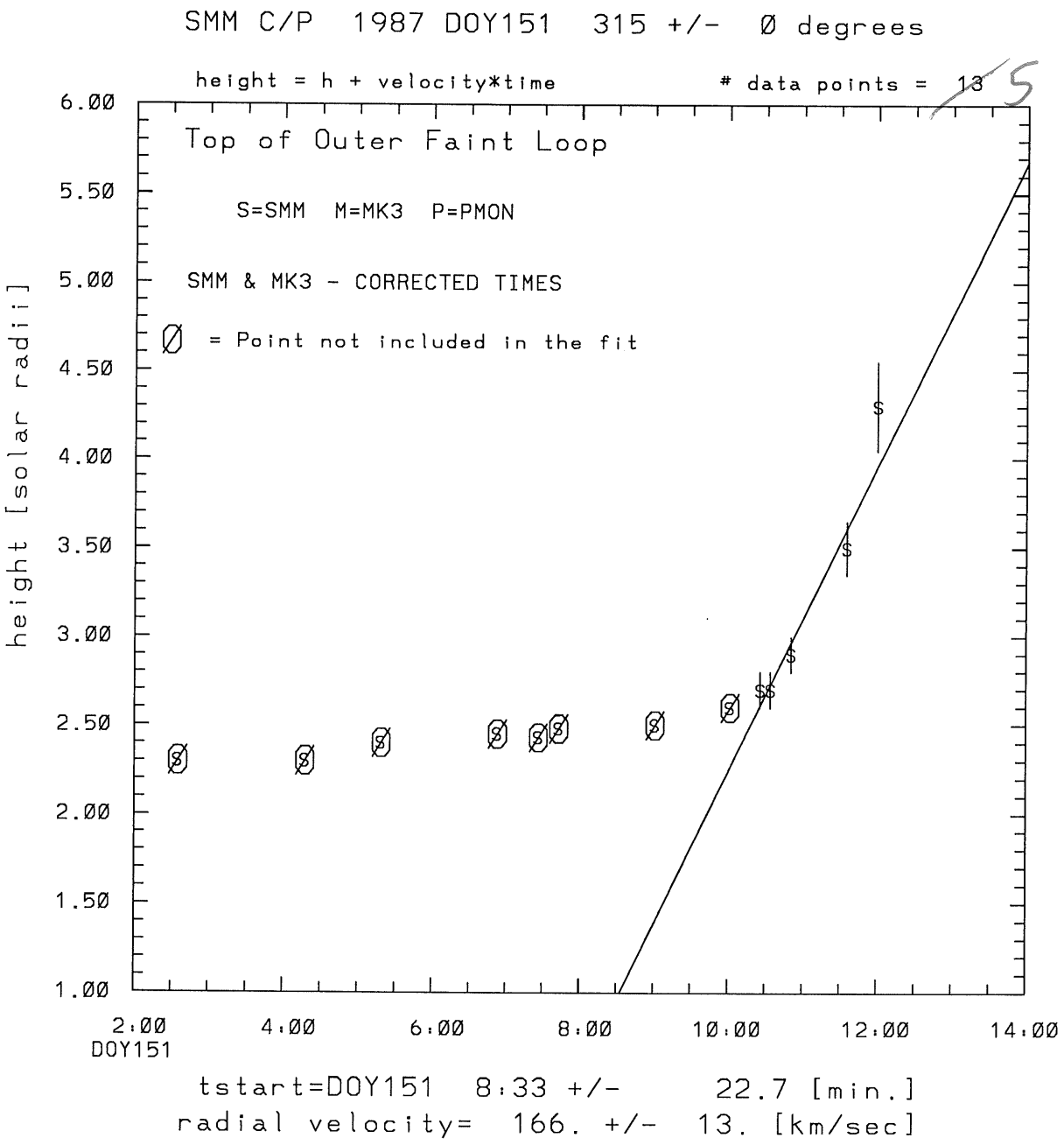
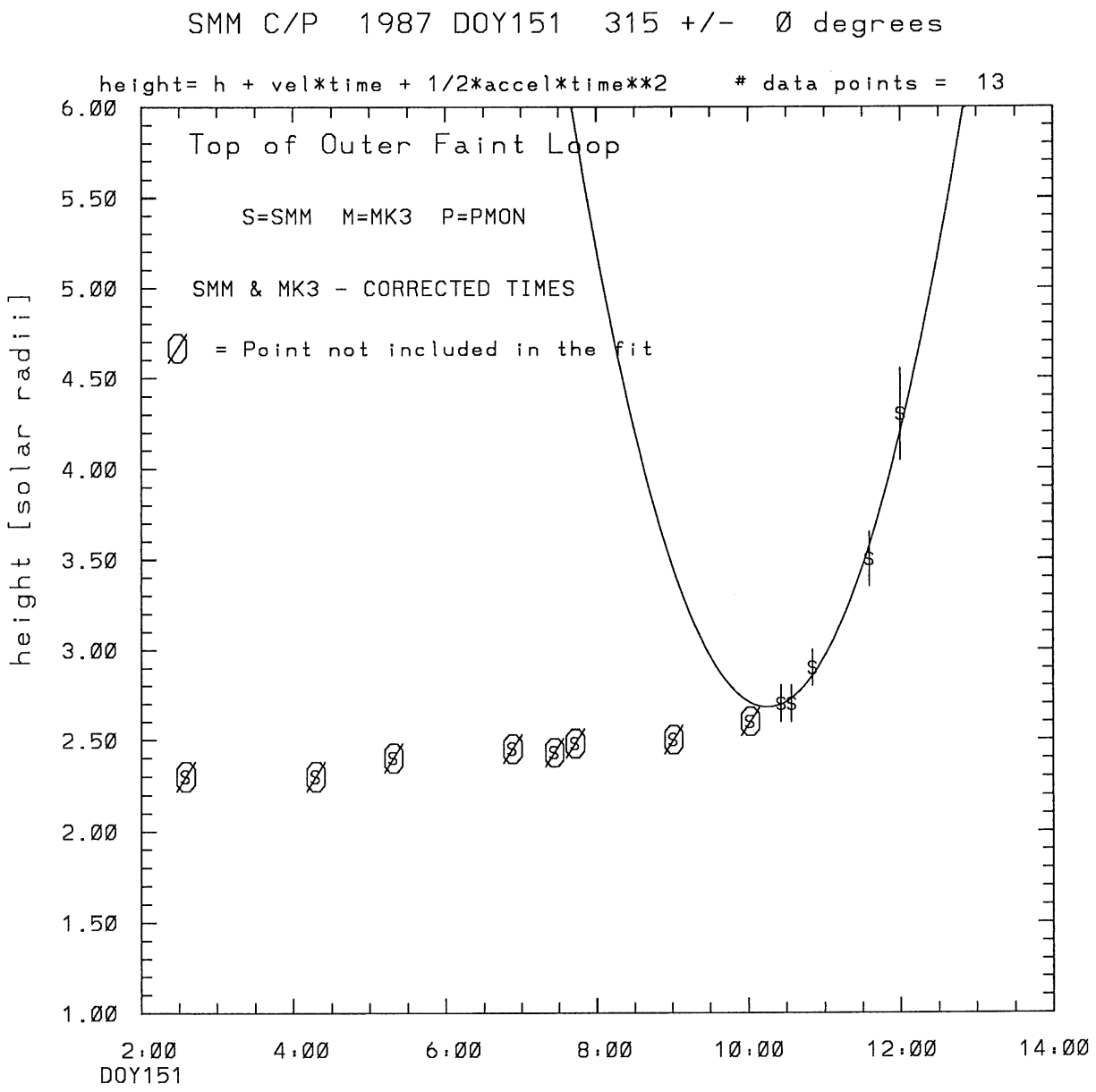

SMM C/P 1987 DOY151 315 +/- Ø degrees
height = h + velocity*time
# data points = 13
Top of Outer Faint Loop
S=SMM M=MK3 P=PMON
SMM & MK3 - CORRECTED TIMES
Ø = Point not included in the fit
height [solar radii]
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
2:00
DOY151
4:00
6:00
8:00
10:00
12:00
14:00
tstart=DOY151 8:33 +/- 22.7 [min.]
radial velocity= 166. +/- 13. [km/sec]

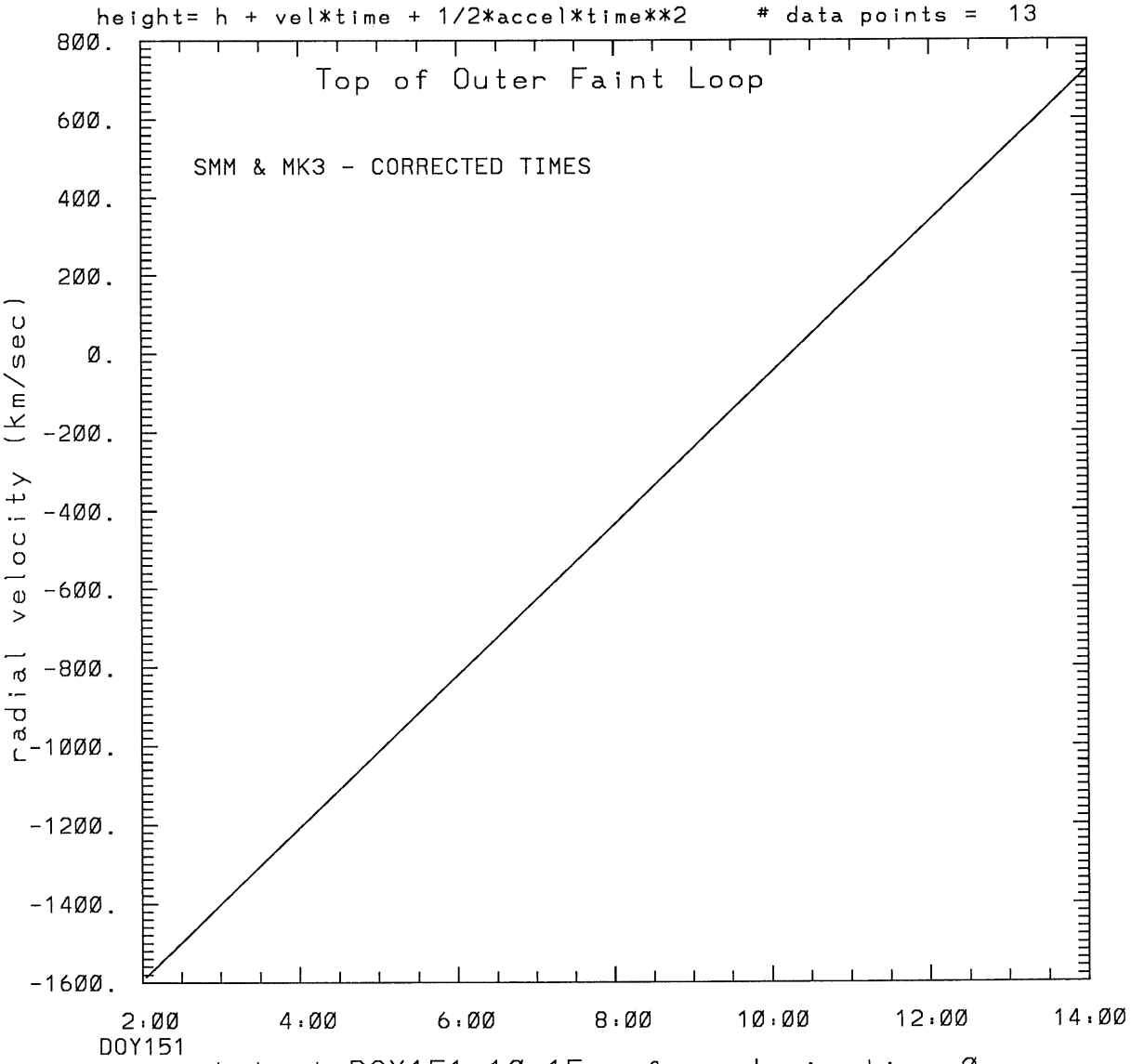


tstart=DOY151 10:15 from derivative=Ø

Event begins at 2.68 Solar Radii

radial acceleration= Ø.0537 +/- Ø.ØØ79 [km/sec**2]

SMM C/P 1987 DOY151 315 +/- Ø degrees



tstart=DOY151 1Ø:15 from derivative=Ø

Event begins at 2.68 Solar Radii

radial acceleration=Ø.537E-Ø1 km/sec**2

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

****
INPUT:
****

year	doy	time	radii	error in radius	angle	error in angle	datatype	
1987	151	2:34:33	2.30	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	4:17: 6	2.30	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	5:18:19	2.40	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	6:52:33	2.45	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	7:25:53	2.43	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	7:42:22	2.48	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	9: 0:22	2.50	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	10: 1: 1	2.60	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	10:25:45	2.70 +/-	0.10	315.0 +/-	0.5	SMM	
1987	151	10:34: 2	2.70 +/-	0.10	315.0 +/-	0.5	SMM	
1987	151	10:50:31	2.90 +/-	0.10	315.0 +/-	0.5	SMM	
1987	151	11:35:15	3.50 +/-	0.15	315.0 +/-	1.0	SMM	
1987	151	11:59:59	4.30 +/-	0.25	315.0 +/-	1.0	SMM	

****
Structure being measured:
Top of Outer Faint Loop
****

****
OUTPUT:
****

START TIME:

Event began at t = 0 + 0.393E+03 +/- 0.227E+02 [minutes]
In more convenient units:
Event began at DOY 151 8:33 +/- 0.227E+02 [minutes]

Origin defined at DOY151 2: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 166. +/- 13. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = -0.462E+01 +/- 0.581E+00 [solar radii]
c(2) = 0.143E-01 +/- 0.110E-02 [radii/min]
c(2) = 0.166E+03 +/- 0.128E+02 [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)= 0.20870E+01 [radii] see Bevington pg. 114
error in c(2)= 0.49958E-02 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = 0.0000E+00 +/- 0.0000E+00[radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 315. +/- 0. [degrees]
a(2) = 0.000E+00 +/- 0.000E+00 [degrees/min]
a(2) = 0.000E+00 +/- 0.000E+00 [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 TANGENTIAL AND TOTAL VELOCITIES AT EACH DATA POINT ARE:
The TANGENTIAL velocity at 2:34 = 0.000E+00 km/sec
The TOTAL velocity at 2:34 = 166. km/sec

The TANGENTIAL velocity at 4:17 = 0.000E+00 km/sec
The TOTAL velocity at 4:17 = 166. km/sec

The TANGENTIAL velocity at 5:18 = 0.000E+00 km/sec
The TOTAL velocity at 5:18 = 166. km/sec

The TANGENTIAL velocity at 6:52 = 0.000E+00 km/sec
The TOTAL velocity at 6:52 = 166. km/sec

The TANGENTIAL velocity at 7:25 = 0.000E+00 km/sec
The TOTAL velocity at 7:25 = 166. km/sec

The TANGENTIAL velocity at 7:42 = 0.000E+00 km/sec
The TOTAL velocity at 7:42 = 166. km/sec

The TANGENTIAL velocity at 9: 0 = 0.000E+00 km/sec
The TOTAL velocity at 9: 0 = 166. km/sec

The TANGENTIAL velocity at 10: 1 = 0.000E+00 km/sec
The TOTAL velocity at 10: 1 = 166. km/sec

The TANGENTIAL velocity at 10:25 = 0.000E+00 km/sec
The TOTAL velocity at 10:25 = 166. km/sec

The TANGENTIAL velocity at 10:34 = 0.000E+00 km/sec
The TOTAL velocity at 10:34 = 166. km/sec

The TANGENTIAL velocity at 10:50 = 0.000E+00 km/sec
The TOTAL velocity at 10:50 = 166. km/sec

The TANGENTIAL velocity at 11:35 = 0.000E+00 km/sec
The TOTAL velocity at 11:35 = 166. km/sec

The TANGENTIAL velocity at 11:59 = 0.000E+00 km/sec
The TOTAL velocity at 11:59 = 166. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.57
Standard Deviation in start time measurement = 0.171E+03
Error in time = 0.71250E+03 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.110E-01
Reduced Chi Squared = 0.223E+02
Chi Squared = 0.245E+03
The probability for exceeding chi square = 0.100E+01

The correlation coefficient = 0.706E+00
The probability that no LINEAR correlation exists between the variables = 0.6967E-02
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

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

****
INPUT:
****

year	doy	time	radii	error in radius	angle	error in angle	datatype	
1987	151	2:34:33	2.30	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	4:17: 6	2.30	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	5:18:19	2.40	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	6:52:33	2.45	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	7:25:53	2.43	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	7:42:22	2.48	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	9: 0:22	2.50	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	10: 1: 1	2.60	-----	315.00 +/-	----	SMM	THIS POINT WASN'T USED IN THE FIT.
1987	151	10:25:45	2.70 +/-	0.10	315.0 +/-	0.5	SMM	
1987	151	10:34: 2	2.70 +/-	0.10	315.0 +/-	0.5	SMM	
1987	151	10:50:31	2.90 +/-	0.10	315.0 +/-	0.5	SMM	
1987	151	11:35:15	3.50 +/-	0.15	315.0 +/-	1.0	SMM	
1987	151	11:59:59	4.30 +/-	0.25	315.0 +/-	1.0	SMM	

****
Structure being measured:
Top of Outer Faint Loop
****

****
OUTPUT:
****

START TIME:

tstart=DOY151 10:15 from derivative = 0
Event begins at 2.68 Solar Radii
Origin defined at DOY151 2: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.537E-01 +/- 0.785E-02 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.367E+02 +/- 0.605E+01 [solar radii]
c(2) = -0.138E+00 +/- 0.222E-01 [radii/min]
c(2) = -0.160E+04 +/- 0.258E+03 [km/sec]
c(3) = 0.139E-03 +/- 0.203E-04 [radii/min**2]
c(3) = 0.537E-01 +/- 0.785E-02 [km/sec**2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.12729E+02 [radii] Bevington pg 154 (8-30)
Exact error in c(1) = 0.10144E+01 [radii] Bevington pg 154 (8-28)
Approximate error in c(2) = 0.84453E-01 [radii/min] Bevington pg 154 (8-30)
Exact error in c(2) = 0.37607E-02 [radii/min] Bevington pg 154 (8-28)
Approximate error in c(3) = 0.12357E-03 [radii/min**] Bevington pg 154 (8-30)
Exact error in c(3) = 0.34797E-05 [radii/min**] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= 0.0000E+00 +/- 0.0000E+00[radians/sec**2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 315. +/- 0. [degrees]
a(2) = 0.000E+00 +/- 0.000E+00 [degrees/min]
a(2) = 0.000E+00 +/- 0.000E+00 [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 TANGENTIAL AND TOTAL VELOCITIES AT EACH DATA POINT ARE:
The TANGENTIAL velocity at 2:34 = 0.000E+00 km/sec
The TOTAL velocity at 2:34 =-1484. km/sec

The TANGENTIAL velocity at 4:17 = 0.000E+00 km/sec
The TOTAL velocity at 4:17 =-1153. km/sec

The TANGENTIAL velocity at 5:18 = 0.000E+00 km/sec
The TOTAL velocity at 5:18 = -956. km/sec

The TANGENTIAL velocity at 6:52 = 0.000E+00 km/sec
The TOTAL velocity at 6:52 = -653. km/sec

The TANGENTIAL velocity at 7:25 = 0.000E+00 km/sec
The TOTAL velocity at 7:25 = -545. km/sec

The TANGENTIAL velocity at 7:42 = 0.000E+00 km/sec
The TOTAL velocity at 7:42 = -492. km/sec

The TANGENTIAL velocity at 9: 0 = 0.000E+00 km/sec
The TOTAL velocity at 9: 0 = -241. km/sec

The TANGENTIAL velocity at 10: 1 = 0.000E+00 km/sec
The TOTAL velocity at 10: 1 = -45. km/sec

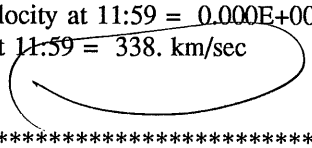
The TANGENTIAL velocity at 10:25 = 0.000E+00 km/sec
The TOTAL velocity at 10:25 = 34. km/sec

The TANGENTIAL velocity at 10:34 = 0.000E+00 km/sec
The TOTAL velocity at 10:34 = 61. km/sec

The TANGENTIAL velocity at 10:50 = 0.000E+00 km/sec
The TOTAL velocity at 10:50 = 114. km/sec

The TANGENTIAL velocity at 11:35 = 0.000E+00 km/sec
The TOTAL velocity at 11:35 = 258. km/sec

The TANGENTIAL velocity at 11:59 = 0.000E+00 km/sec
The TOTAL velocity at 11:59 = 338. km/sec

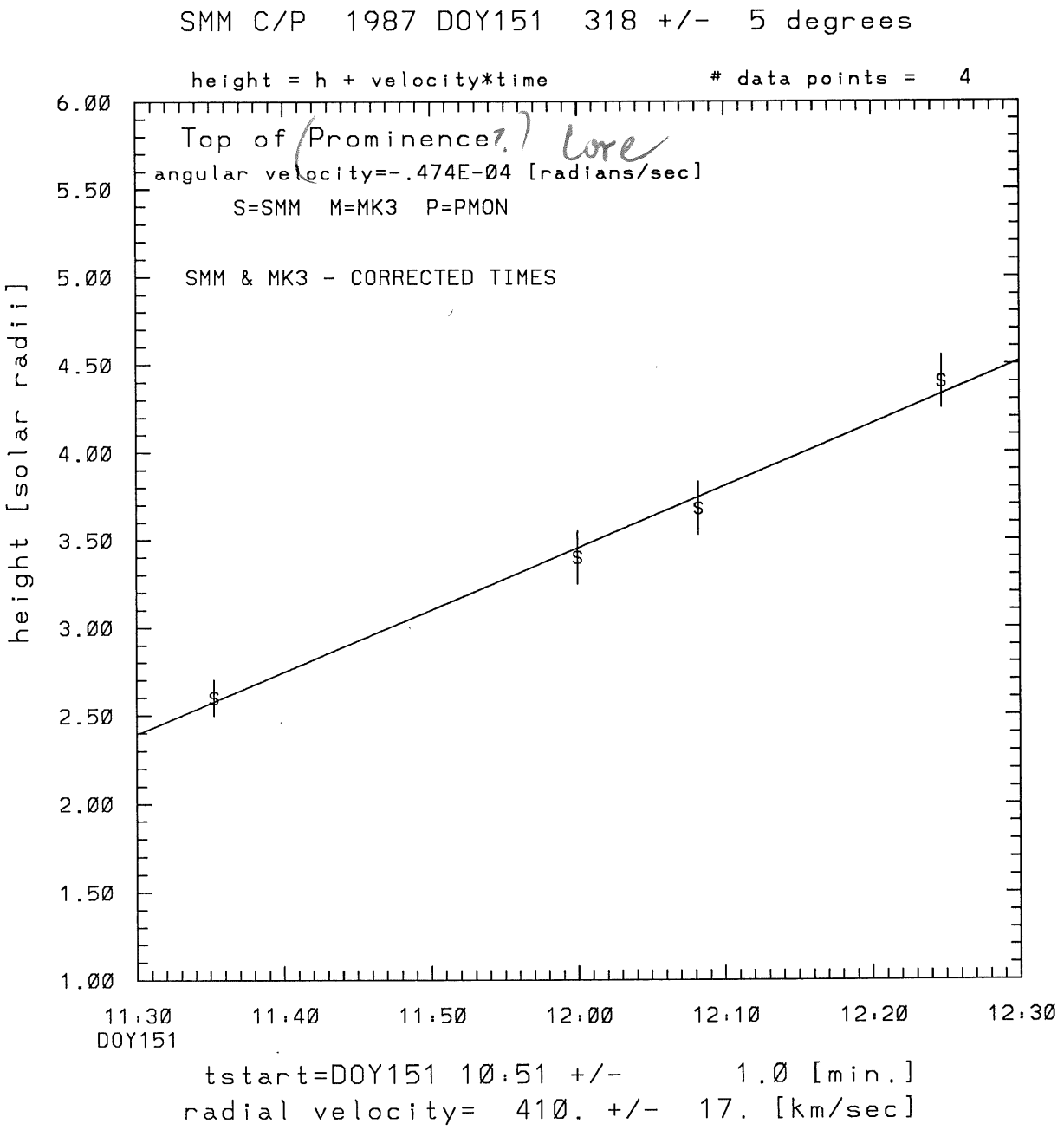


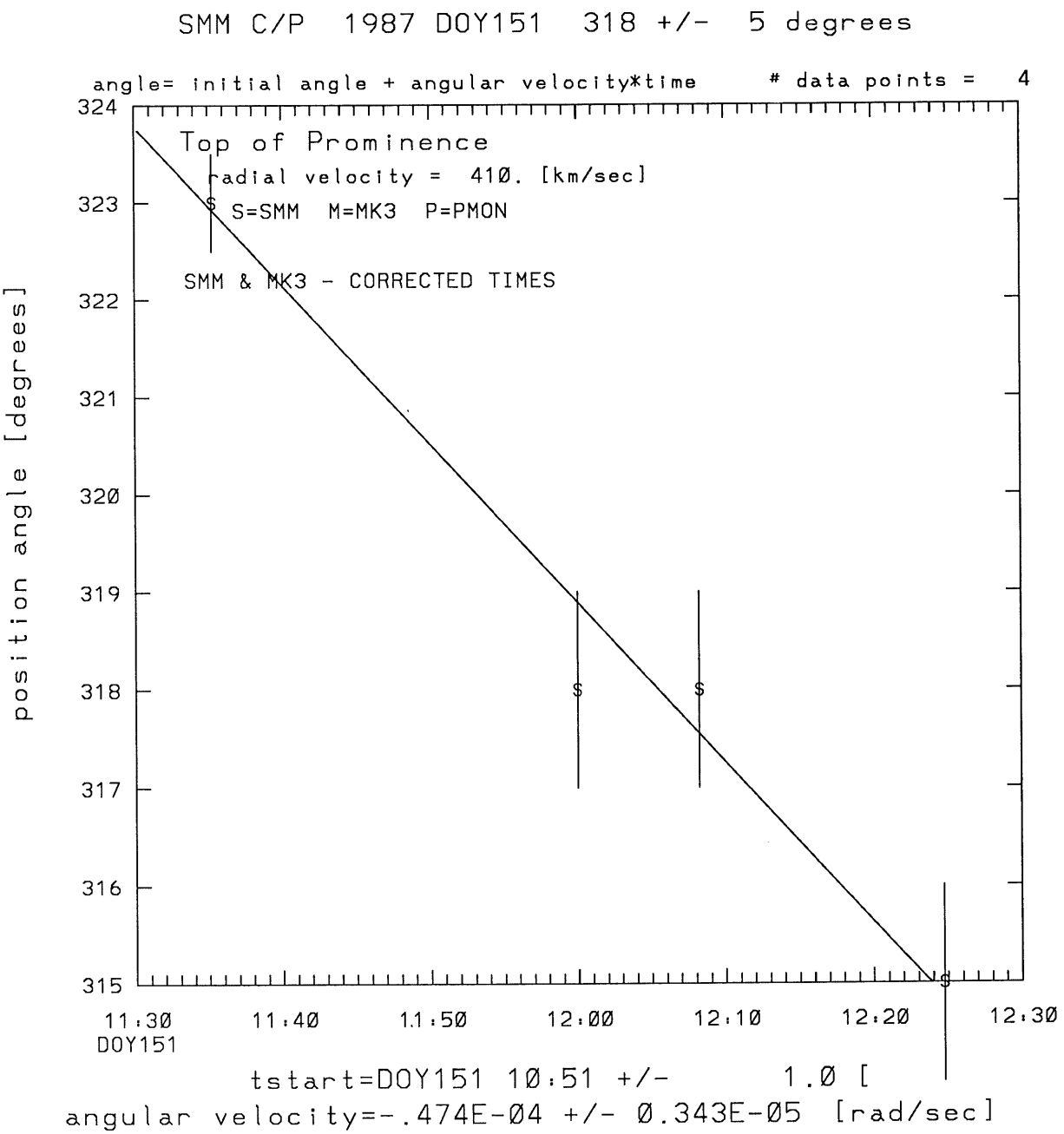
****
The following info is for estimating goodness of the fit
****

Fit is ok [ier=1]

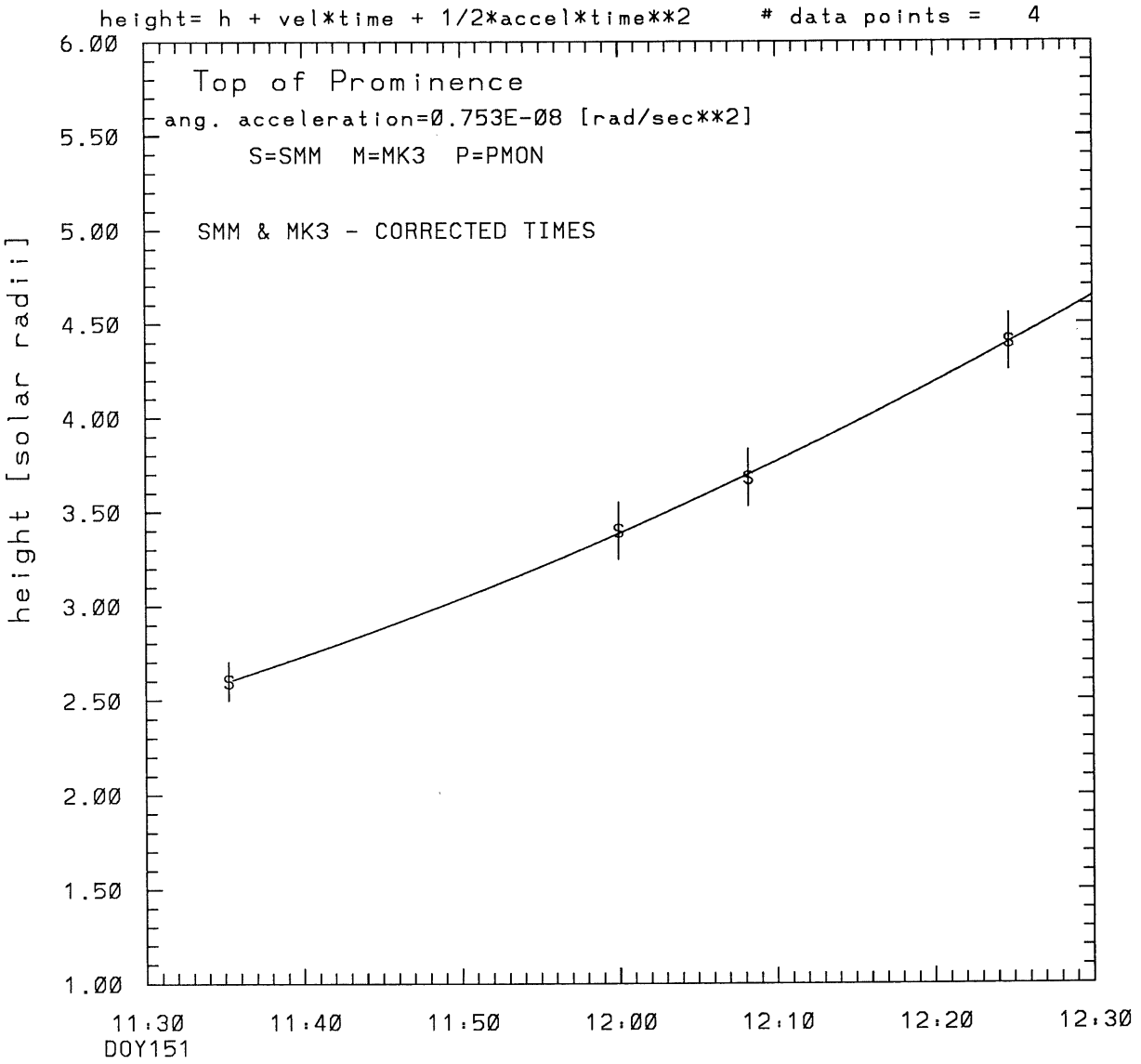
Standard Deviation in the height = 0.57
Standard Deviation in start time measurement = 0.171E+03
Value of reduced Chi Squared returned from nllst2 = 0.219E-02
Reduced Chi Squared = 0.233E+03
Chi Squared = 0.233E+04
The probability for exceeding chi square = 0.100E+01

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 = 0.5092E+00
The correlation between the data and the time**2 term = 0.6085E+00
The correlation between the data and the complete equation of motion = -0.4816E+01
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]


SMM C/P 1987 DOY151 318 +/- 5 degrees
height = h + velocity*time
# data points = 4
Top of Prominence? Core
angular velocity=-.474E-04 [radians/sec]
S=SMM M=MK3 P=PMON
SMM & MK3 - CORRECTED TIMES
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
11:30
DOY151
11:40
11:50
12:00
12:10
12:20
12:30
tstart=DOY151 10:51 +/- 1.0 [min.]
radial velocity= 410. +/- 17. [km/sec]


SMM C/P 1987 DOY151 318 +/- 5 degrees
angle= initial angle + angular velocity*time
# data points = 4
Top of Prominence
radial velocity = 410. [km/sec]
S=SMM M=MK3 P=PMON
SMM & MK3 - CORRECTED TIMES
position angle [degrees]
324
323
322
321
320
319
318
317
316
315
11:30
DOY151
11:40
11:50
12:00
12:10
12:20
12:30
tstart=DOY151 10:51 +/- 1.0 [
angular velocity=-.474E-04 +/- 0.343E-05 [rad/sec]

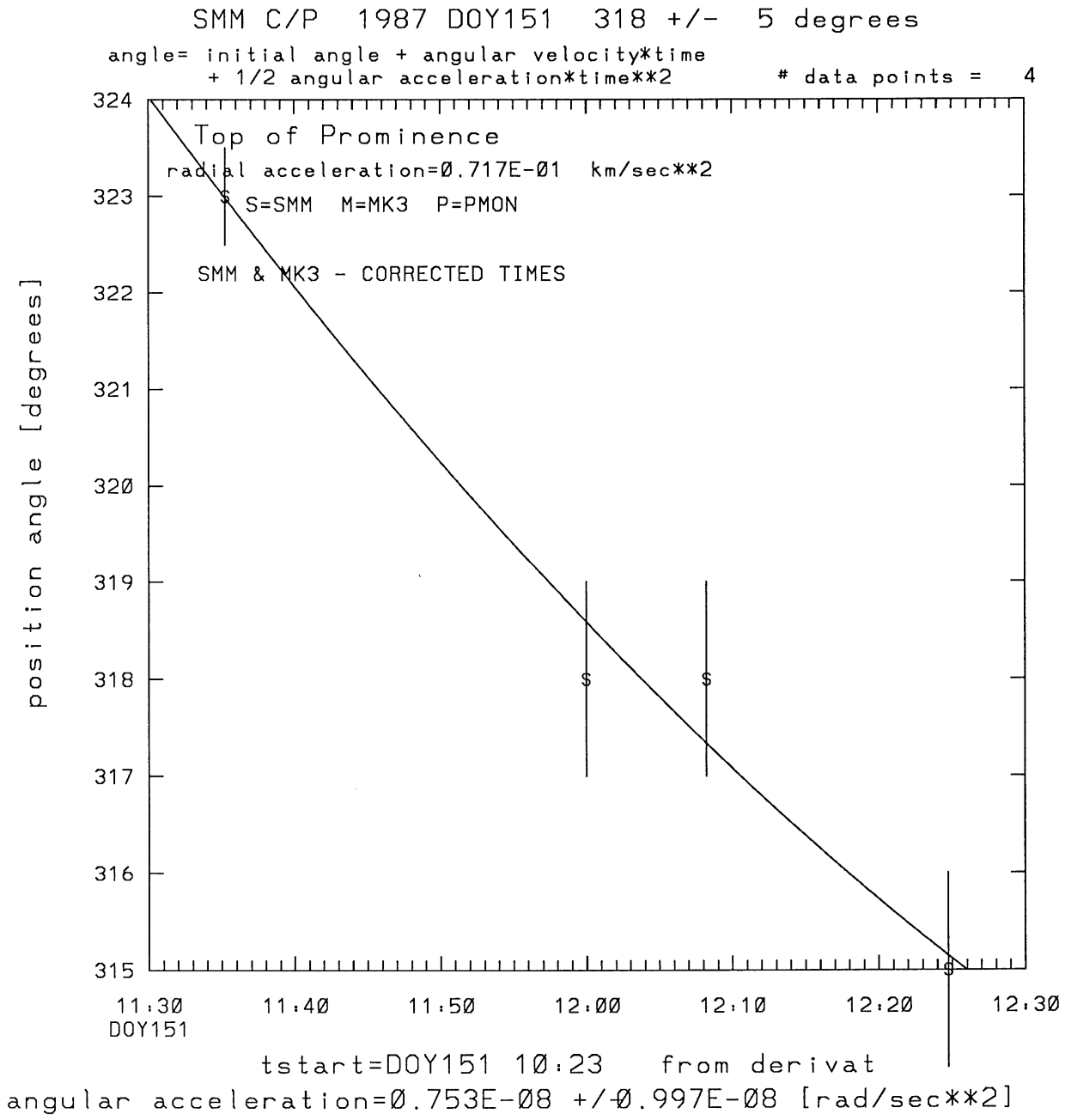
SMM C/P 1987 DOY151 318 +/- 5 degrees

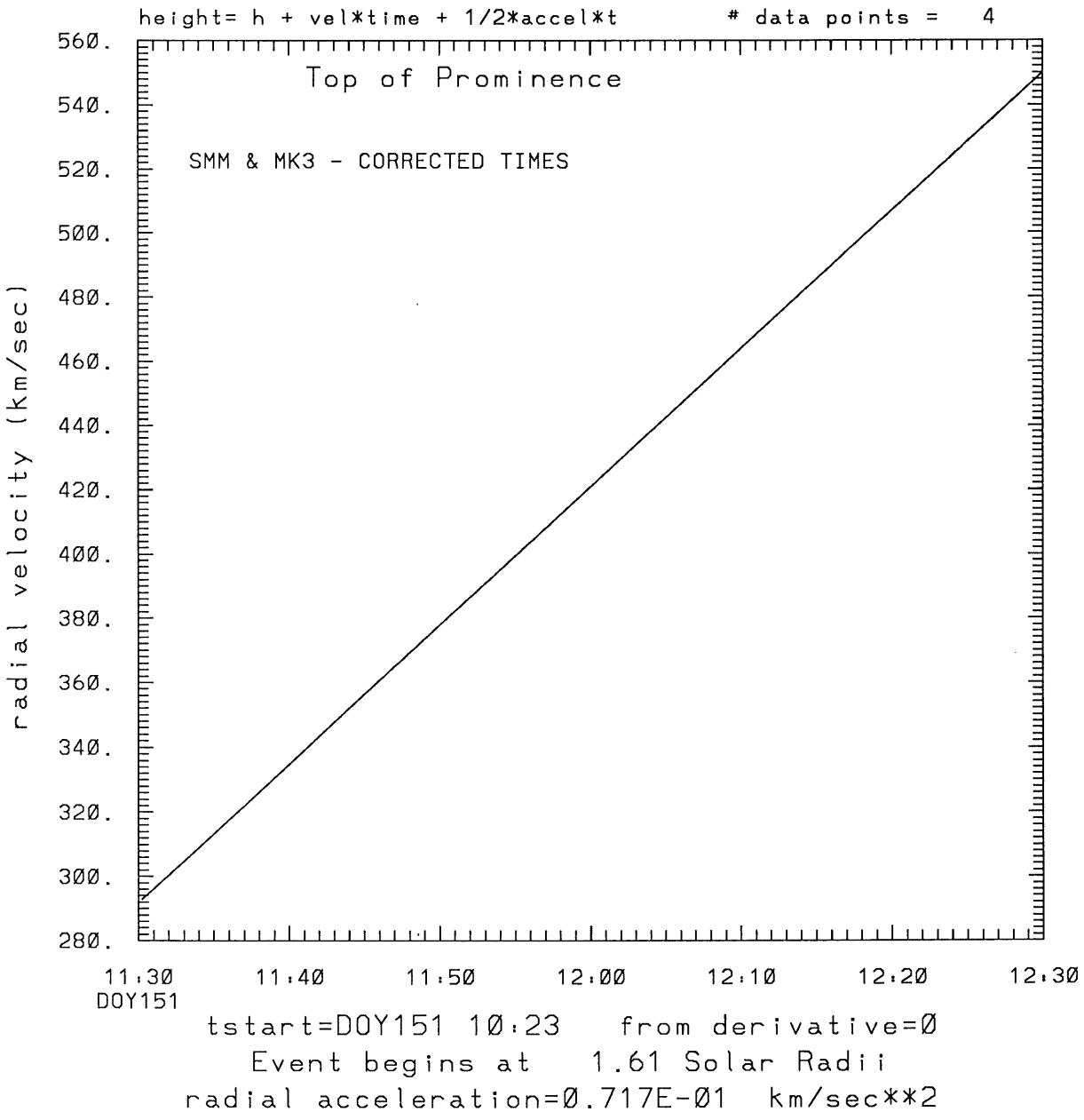


tstart=DOY151 10:23 from derivative=0

Event begins at 1.61 Solar Radii

radial acceleration= 0.0717 +/- 0.0105 [km/sec**2]


SMM C/P 1987 DOY151 318 +/- 5 degrees
angle= initial angle + angular velocity*time
+ 1/2 angular acceleration*time**2
# data points = 4
Top of Prominence
radial acceleration=Ø.717E-Ø1 km/sec**2
S=SMM M=MK3 P=PMON
SMM & MK3 - CORRECTED TIMES
position angle [degrees]
324
323
322
321
320
319
318
317
316
315
11:30
DOY151
11:40
11:50
12:00
12:10
12:20
12:30
tstart=DOY151 10:23 from derivat
angular acceleration=Ø.753E-Ø8 +/-Ø.997E-Ø8 [rad/sec**2]

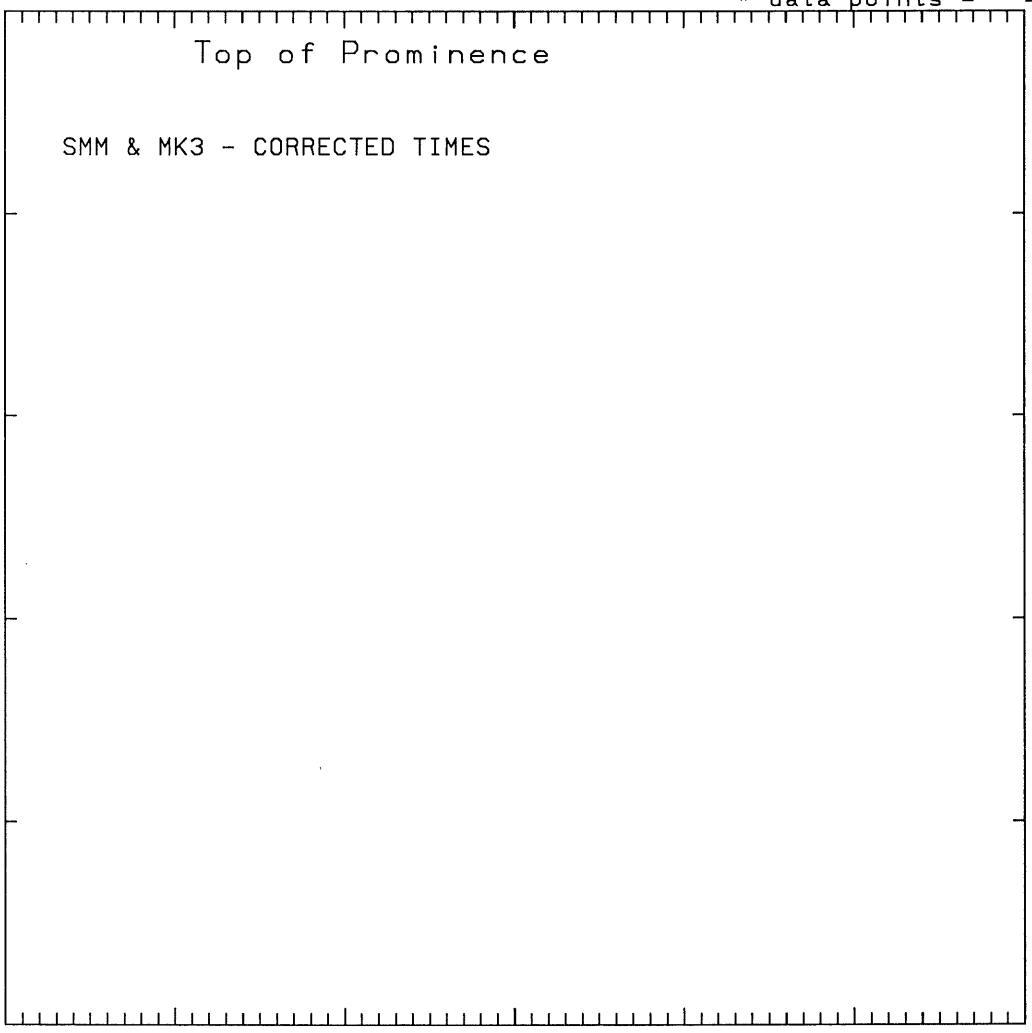

SMM C/P 1987 DOY151 318 +/- 5 degrees
height= h + vel*time + 1/2*accel*t
# data points = 4
Top of Prominence
SMM & MK3 - CORRECTED TIMES
radial velocity (km/sec)
560.
540.
520.
500.
480.
460.
440.
420.
400.
380.
360.
340.
320.
300.
280.
11:30
DOY151
11:40
11:50
12:00
12:10
12:20
12:30
tstart=DOY151 10:23 from derivative=0
Event begins at 1.61 Solar Radii
radial acceleration=0.717E-01 km/sec**2

-0.10E-03

SMM C/P 1987 DOY151 318 +/- 5 degrees

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

data points = 4



tstart=DOY151 10:23 from derivative=0
angular acceleration=0.753E-08 +/-
0.997E-08 [rad/sec**2]

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

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

                                   error in          error in
year doy    time      radii   radius      angle    angle    datatype
1987 151  11:35:15   2.60 +/- 0.10    323.0 +/-  0.5        SMM
1987 151  11:59:59   3.40 +/- 0.15    318.0 +/-  1.0        SMM
1987 151  12: 8:15   3.68 +/- 0.15    318.0 +/-  1.0        SMM
1987 151  12:24:44   4.40 +/- 0.15    315.0 +/-  1.0        SMM

****************************************
 Structure being measured:
Top of (Prominence?) Core
****************************************

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

START TIME:

 Event began at t = 0 + -0.394E+02 +/-  0.972E+00 [minutes]
 In more convenient units:
 Event began at DOY 151 10:51 +/-  0.972E+00 [minutes]

 Origin defined at DOY151 11:30

RADIAL INFORMATION:

RADIAL VELOCITY =   410. +/-    17. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =    0.239E+01 +/-    0.483E-01 [solar radii]
 c(2) =    0.354E-01 +/-    0.150E-02 [radii/min]
 c(2) =    0.410E+03 +/-    0.174E+02 [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)=  0.81850E-01 [radii] see Bevington pg. 114
                    error in c(2)=  0.22307E-02 [radii/min] see Bevington pg. 114
ANGULAR INFORMATION:

ANGULAR VELOCITY = -0.4743E-04 +/-   0.3432E-05[radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

 a(1) = 324. +/-   0. [degrees]
 a(2) =   -0.163E+00 +/-    0.118E-01 [degrees/min]
 a(2) =   -0.474E-04 +/-    0.343E-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 11:35 =  410. km/sec

The RADIAL velocity at 11:59 =  410. km/sec

The RADIAL velocity at 12: 8 =  410. km/sec
```

The RADIAL velocity at 12:24 = 410. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.74
Standard Deviation in start time measurement = 0.179E+02
Error in time = 0.31841E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.337E-02
Reduced Chi Squared = 0.196E-01
Chi Squared = 0.393E-01
The probability for exceeding chi square = 0.997E+00

The correlation coefficient = 0.996E+00
The probability that no LINEAR correlation exists between the variables = 0.3650
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
1987 151  11:35:15   2.60 +/- 0.10    323.0 +/-  0.5        SMM
1987 151  11:59:59   3.40 +/- 0.15    318.0 +/-  1.0        SMM
1987 151  12: 8:15   3.68 +/- 0.15    318.0 +/-  1.0        SMM
1987 151  12:24:44   4.40 +/- 0.15    315.0 +/-  1.0        SMM

****************************************
 Structure being measured:
Top of (Prominence?) Core
****************************************

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

START TIME:

 tstart=DOY151 10:23 from derivative = 0
Event begins at   1.61 Solar Radii
 Origin defined at DOY151 11:30

RADIAL INFORMATION:

RADIAL ACCELERATION =  0.717E-01 +/-  0.105E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =    0.246E+01 +/-    0.159E-01 [solar radii]
 c(2) =    0.252E-01 +/-    0.155E-02 [radii/min]
 c(2) =    0.292E+03 +/-    0.179E+02 [km/sec]
 c(3) =    0.186E-03 +/-    0.272E-04 [radii/min**2]
 c(3) =    0.717E-01 +/-    0.105E-01 [km/sec**2]

 The computed ERRORS in coefficients [BEVINGTON] are:

    Approximate error in c(1) =  0.32079E-01 [radii] Bevington pg 154 (8-30)
          Exact error in c(1) =  0.57989E-02 [radii] Bevington pg 154 (8-28)
    Approximate error in c(2) =  0.24550E-02 [radii/min] Bevington pg 154 (8-30)
          Exact error in c(2) =  0.11893E-02 [radii/min] Bevington pg 154 (8-28)
    Approximate error in c(3) =  0.40558E-04 [radii/min**2] Bevington pg 154 (8-30)
          Exact error in c(3) =  0.20016E-04 [radii/min**2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION=  0.7528E-08 +/-   0.9968E-08[radians/sec**2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

 a(1) = 324. +/-   0. [degrees]
 a(2) =   -0.205E+00 +/-    0.568E-01 [degrees/min]
 a(2) =   -0.596E-04 +/-    0.165E-04 [rad/sec]
 a(3) =    0.776E-03 +/-    0.103E-02 [degrees/min**2]
 a(3) =    0.753E-08 +/-    0.997E-08 [rad/sec**2]

The RADIAL velocity at 11:35 =  314. km/sec

The RADIAL velocity at 11:59 =  421. km/sec
```

The RADIAL velocity at 12: 8 = 456. km/sec

The RADIAL velocity at 12:24 = 527. km/sec

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

 Fit is ok [ier=1]

 Standard Deviation in the height = 0.74
 Standard Deviation in start time measurement =   0.179E+02
 Value of reduced Chi Squared returned from nllst2 = 0.209E-03
 Reduced Chi Squared = 0.142E-02
 Chi Squared = 0.142E-02
 The probability for exceeding chi square = 0.988E+00

 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 =   0.1137E+01
 The correlation between the data and the time**2 term =   0.1042E+01
 The correlation between the data and the complete equation of motion=0.9997E+00
 SEE BEVINGTON "Data Reduction and Error Analysis" [1969]