SMM C/P 1980 DOY231 113 +/- 0 degrees

height = h + velocity*time   # data points = 10

Top of Loop

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

11:40   11:50   12:00   12:10   12:20   12:30   12:40
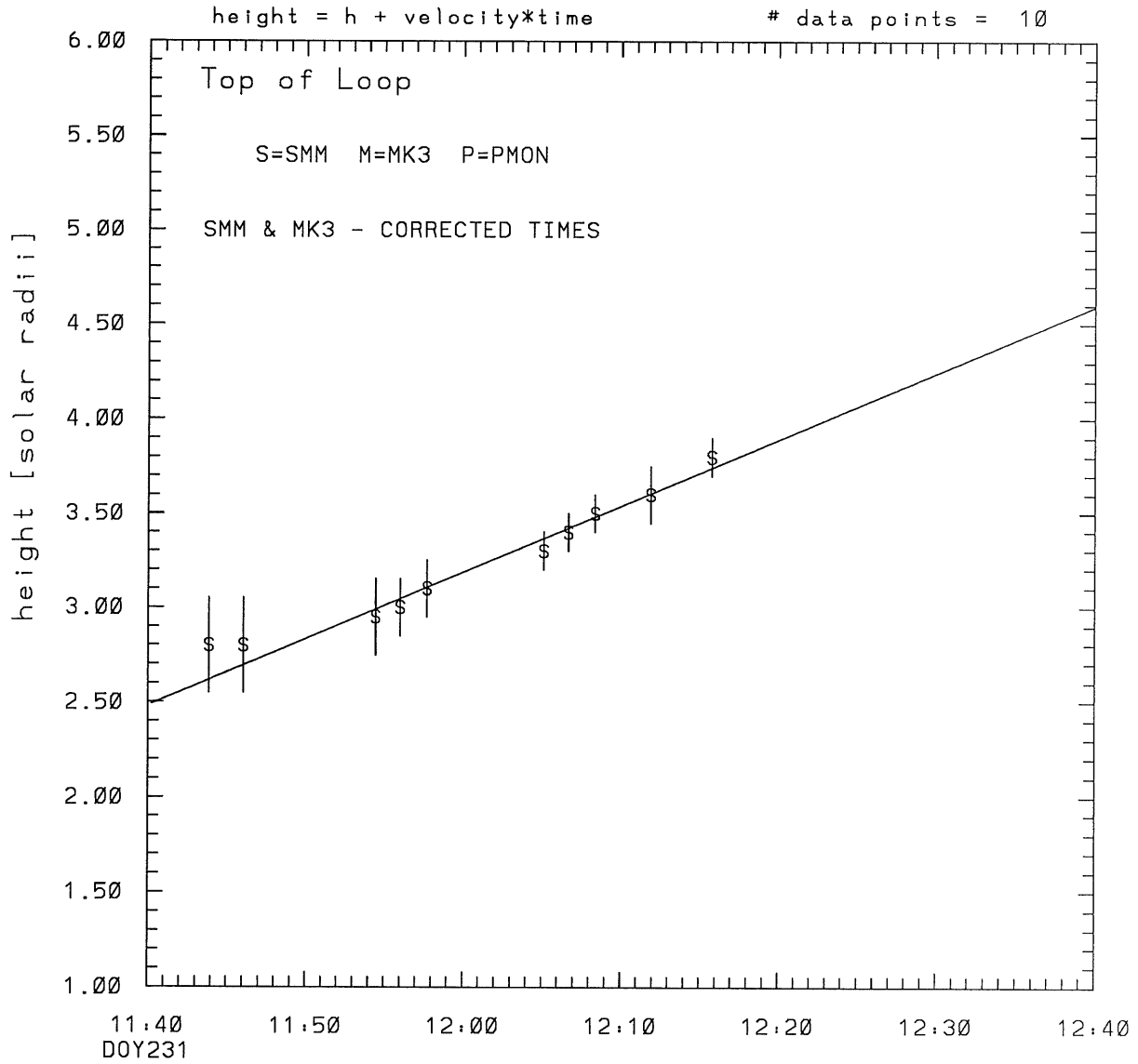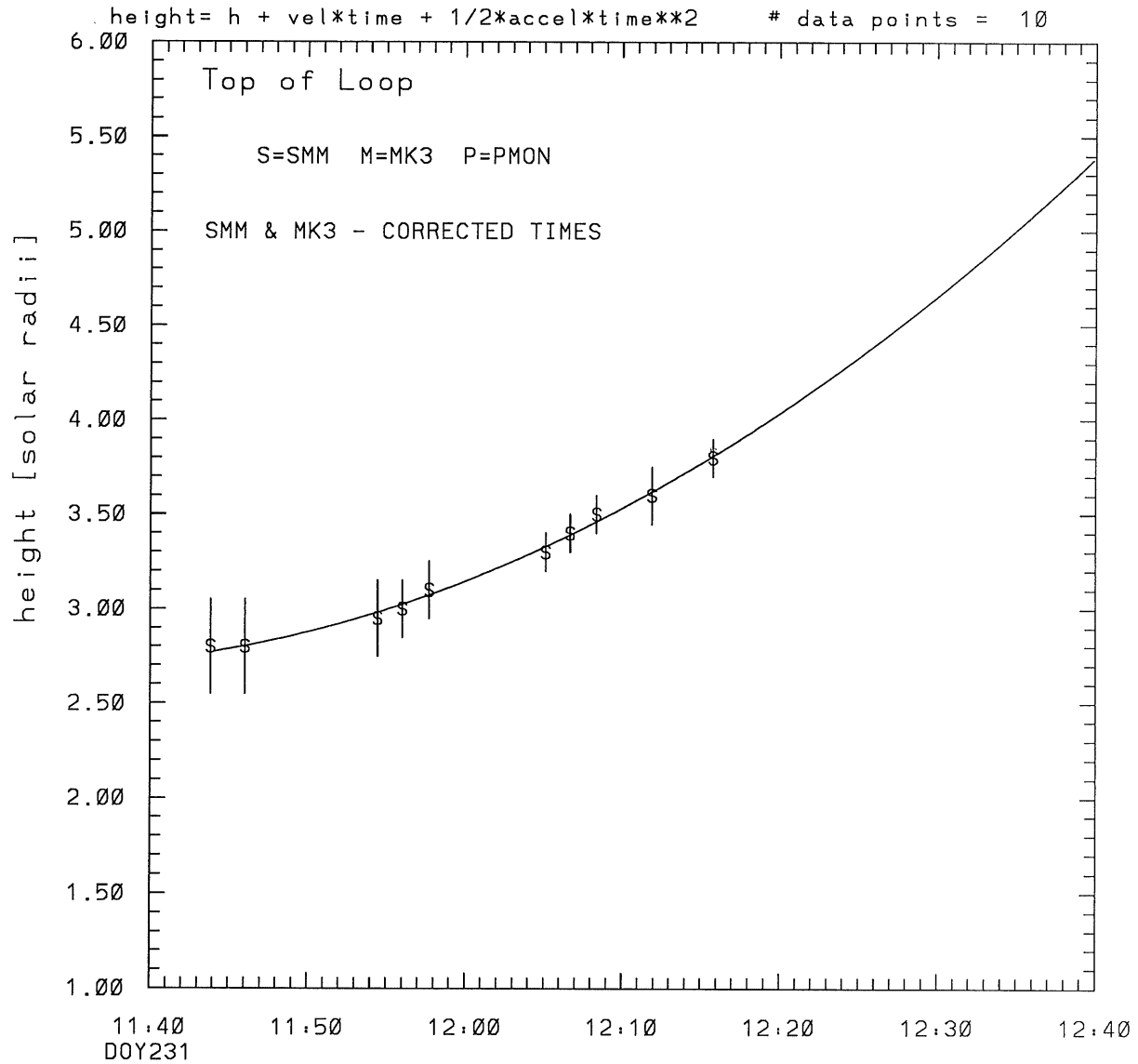DOY231

tstart=DOY231 10:58 +/-   0.2 [min.]
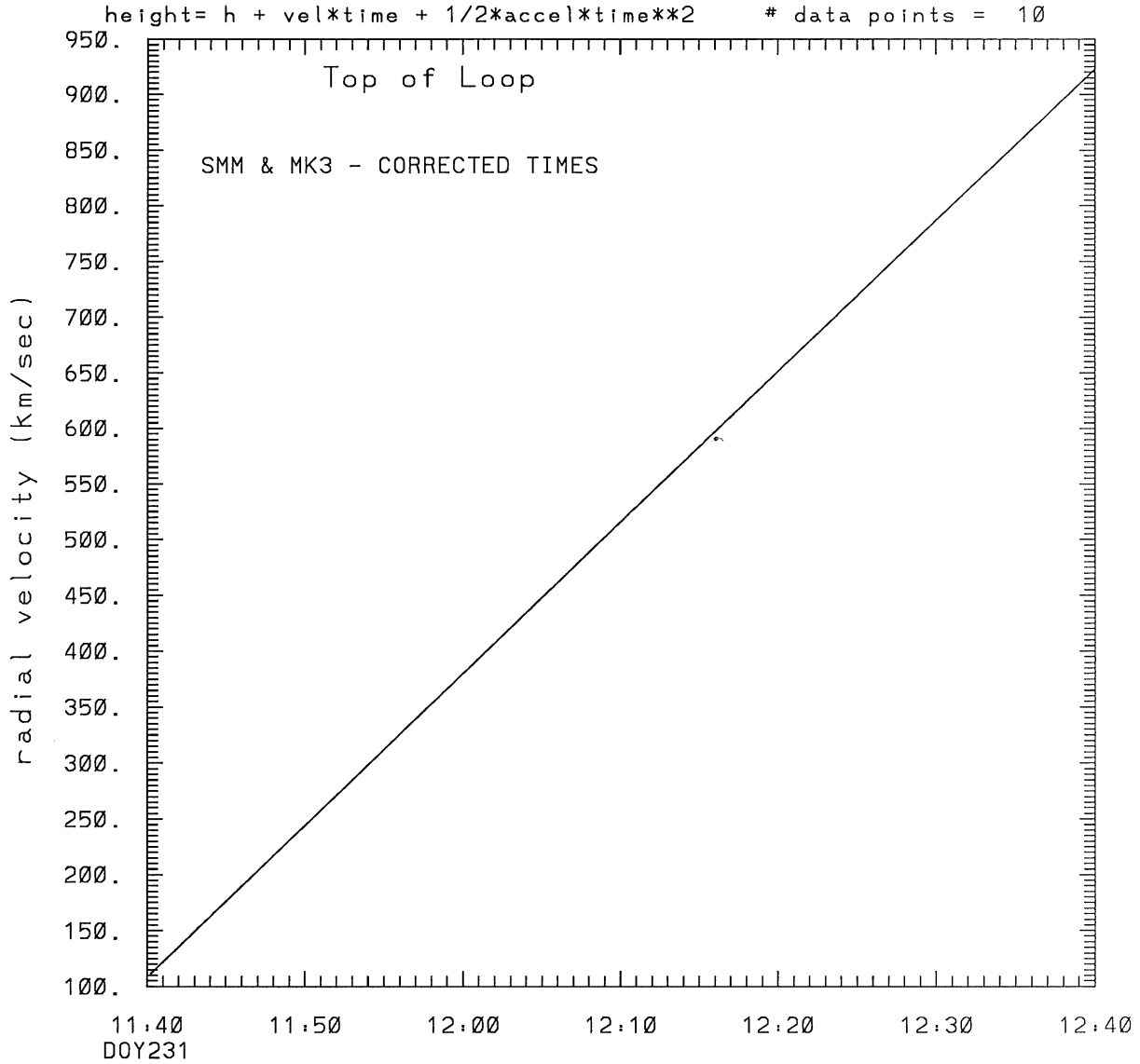radial velocity= 408. +/- 26. [km/sec]

SMM C/P   1980 DOY231   113 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points = 10

Top of Loop

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

11:40   11:50   12:00   12:10   12:20   12:30   12:40
DOY231

tstart=DOY231 11:33   from derivative=0
Event begins at   2.69 Solar Radii
radial acceleration= 0.2262 +/- 0.0413 [km/sec**2]

SMM C/P 1980 DOY231 113 +/- Ø degrees

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

radial velocity (km/sec)

Top of Loop

SMM & MK3 - CORRECTED TIMES

950.
900.
850.
800.
750.
700.
650.
600.
550.
500.
450.
400.
350.
300.
250.
200.
150.
100.

11:40   11:50   12:00   12:10   12:20   12:30   12:40
DOY231

tstart=DOY231 11:33   from derivative=Ø
Event begins at   2.69 Solar Radii
radial acceleration=Ø.226E+ØØ km/sec**2

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


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


                        error in        error in
year doy    time    radii  radius    angle  angle    datatype
1980 231  11:43:51  2.80 +/- 0.25   113.0 +/-  0.5      SMM
1980 231  11:46: 2  2.80 +/- 0.25   113.0 +/-  0.5      SMM
1980 231  11:54:27  2.95 +/- 0.20   113.0 +/-  0.5      SMM
1980 231  11:56: 1  3.00 +/- 0.15   113.0 +/-  1.0      SMM
1980 231  11:57:43  3.10 +/- 0.15   113.0 +/-  1.0      SMM
1980 231  12: 5: 7  3.30 +/- 0.10   113.0 +/-  1.0      SMM
1980 231  12: 6:41  3.40 +/- 0.10   113.0 +/-  1.0      SMM
1980 231  12: 8:23  3.50 +/- 0.10   113.0 +/-  1.0      SMM
1980 231  12:11:54  3.60 +/- 0.15   113.0 +/-  1.0      SMM
1980 231  12:15:47  3.80 +/- 0.10   113.0 +/-  1.0      SMM


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


********
 OUTPUT:
********
```

START TIME:

Event began at t = 0 + -0.421E+02 +/- 0.236E+00 [minutes]
In more convenient units:
Event began at DOY 231 10:58 +/- 0.236E+00 [minutes]

Origin defined at DOY231 11:40

RADIAL INFORMATION:

RADIAL VELOCITY =   408. +/-   26. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) =   0.248E+01 +/-   0.606E-01 [solar radii]
c(2) =   0.352E-01 +/-   0.227E-02 [radii/min]
c(2) =   0.408E+03 +/-   0.264E+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)= 0.60201E-01 [radii] see Bevington pg. 114

error in c(2)= 0.26207E-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) = 113. +/- 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 11:43 = 0.000E+00 km/sec
The TOTAL velocity at 11:43 = 408. km/sec

The TANGENTIAL velocity at 11:46 = 0.000E+00 km/sec
The TOTAL velocity at 11:46 = 408. km/sec

The TANGENTIAL velocity at 11:54 = 0.000E+00 km/sec
The TOTAL velocity at 11:54 = 408. km/sec

The TANGENTIAL velocity at 11:56 = 0.000E+00 km/sec
The TOTAL velocity at 11:56 = 408. km/sec

The TANGENTIAL velocity at 11:57 = 0.000E+00 km/sec
The TOTAL velocity at 11:57 = 408. km/sec

The TANGENTIAL velocity at 12: 5 = 0.000E+00 km/sec
The TOTAL velocity at 12: 5 = 408. km/sec

The TANGENTIAL velocity at 12: 6 = 0.000E+00 km/sec
The TOTAL velocity at 12: 6 = 408. km/sec

The TANGENTIAL velocity at 12: 8 = 0.000E+00 km/sec
The TOTAL velocity at 12: 8 = 408. km/sec

The TANGENTIAL velocity at 12:11 = 0.000E+00 km/sec
The TOTAL velocity at 12:11 = 408. km/sec

The TANGENTIAL velocity at 12:15 = 0.000E+00 km/sec
The TOTAL velocity at 12:15 = 408. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.35

Standard Deviation in start time measurement =   0.102E+02
Error in time =   0.67754E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.321E-02
Reduced Chi Squared = 0.170E-01
Chi Squared = 0.136E+00
The probability for exceeding chi square = 0.100E+01

The correlation coefficient =   0.981E+00
The probability that no LINEAR correlation exists between the variables =   0.5798E-06
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
1980 231	11:43:51	2.80 +/- 0.25		113.0 +/- 0.5		SMM
1980 231	11:46: 2	2.80 +/- 0.25		113.0 +/- 0.5		SMM
1980 231	11:54:27	2.95 +/- 0.20		113.0 +/- 0.5		SMM
1980 231	11:56: 1	3.00 +/- 0.15		113.0 +/- 1.0		SMM
1980 231	11:57:43	3.10 +/- 0.15		113.0 +/- 1.0		SMM
1980 231	12: 5: 7	3.30 +/- 0.10		113.0 +/- 1.0		SMM
1980 231	12: 6:41	3.40 +/- 0.10		113.0 +/- 1.0		SMM
1980 231	12: 8:23	3.50 +/- 0.10		113.0 +/- 1.0		SMM
1980 231	12:11:54	3.60 +/- 0.15		113.0 +/- 1.0		SMM
1980 231	12:15:47	3.80 +/- 0.10		113.0 +/- 1.0		SMM

```
*****************************************
 Structure being measured:
 Top of Loop
*****************************************


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


START TIME:

tstart=DOY231 11:33 from derivative = 0
Event begins at   2.69 Solar Radii
 Origin defined at DOY231 11:40


RADIAL INFORMATION:

RADIAL ACCELERATION =  0.226E+00 +/-  0.413E-01 km/sec**2


The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =    0.272E+01 +/-    0.532E-01 [solar radii]
 c(2) =    0.935E-02 +/-    0.485E-02 [radii/min]
 c(2) =    0.108E+03 +/-    0.562E+02 [km/sec]
 c(3) =    0.585E-03 +/-    0.107E-03 [radii/min**2]
 c(3) =    0.226E+00 +/-    0.413E-01 [km/sec**2]


The computed ERRORS in coefficients [BEVINGTON] are:

        Approximate error in c(1) =  0.34254E-01 [radii] Bevington pg 154 (8-30)
            Exact error in c(1) =  0.38321E-02 [radii] Bevington pg 154 (8-28)
        Approximate error in c(2) =  0.39647E-02 [radii/min] Bevington pg 154 (8-30)
```

Exact error in c(2) = 0.69832E-03 [radii/min] Bevington pg 154 (8-28)
Approximate error in c(3) = 0.99234E-04 [radii/min**] Bevington pg 154 (8-30)
Exact error in c(3) = 0.17866E-04 [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) = 113. +/-   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 11:43 = 0.000E+00 km/sec
The TOTAL velocity at 11:43 = 161. km/sec

The TANGENTIAL velocity at 11:46 = 0.000E+00 km/sec
The TOTAL velocity at 11:46 = 190. km/sec

The TANGENTIAL velocity at 11:54 = 0.000E+00 km/sec
The TOTAL velocity at 11:54 = 305. km/sec

The TANGENTIAL velocity at 11:56 = 0.000E+00 km/sec
The TOTAL velocity at 11:56 = 326. km/sec

The TANGENTIAL velocity at 11:57 = 0.000E+00 km/sec
The TOTAL velocity at 11:57 = 349. km/sec

The TANGENTIAL velocity at 12: 5 = 0.000E+00 km/sec
The TOTAL velocity at 12: 5 = 449. km/sec

The TANGENTIAL velocity at 12: 6 = 0.000E+00 km/sec
The TOTAL velocity at 12: 6 = 471. km/sec

The TANGENTIAL velocity at 12: 8 = 0.000E+00 km/sec
The TOTAL velocity at 12: 8 = 494. km/sec

The TANGENTIAL velocity at 12:11 = 0.000E+00 km/sec
The TOTAL velocity at 12:11 = 541. km/sec

The TANGENTIAL velocity at 12:15 = 0.000E+00 km/sec
The TOTAL velocity at 12:15 = 594. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.35
Standard Deviation in start time measurement =   0.102E+02
Value of reduced Chi Squared returned from nllst2 = 0.760E-03
Reduced Chi Squared = 0.442E-02
Chi Squared = 0.309E-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 =   0.8966E+00
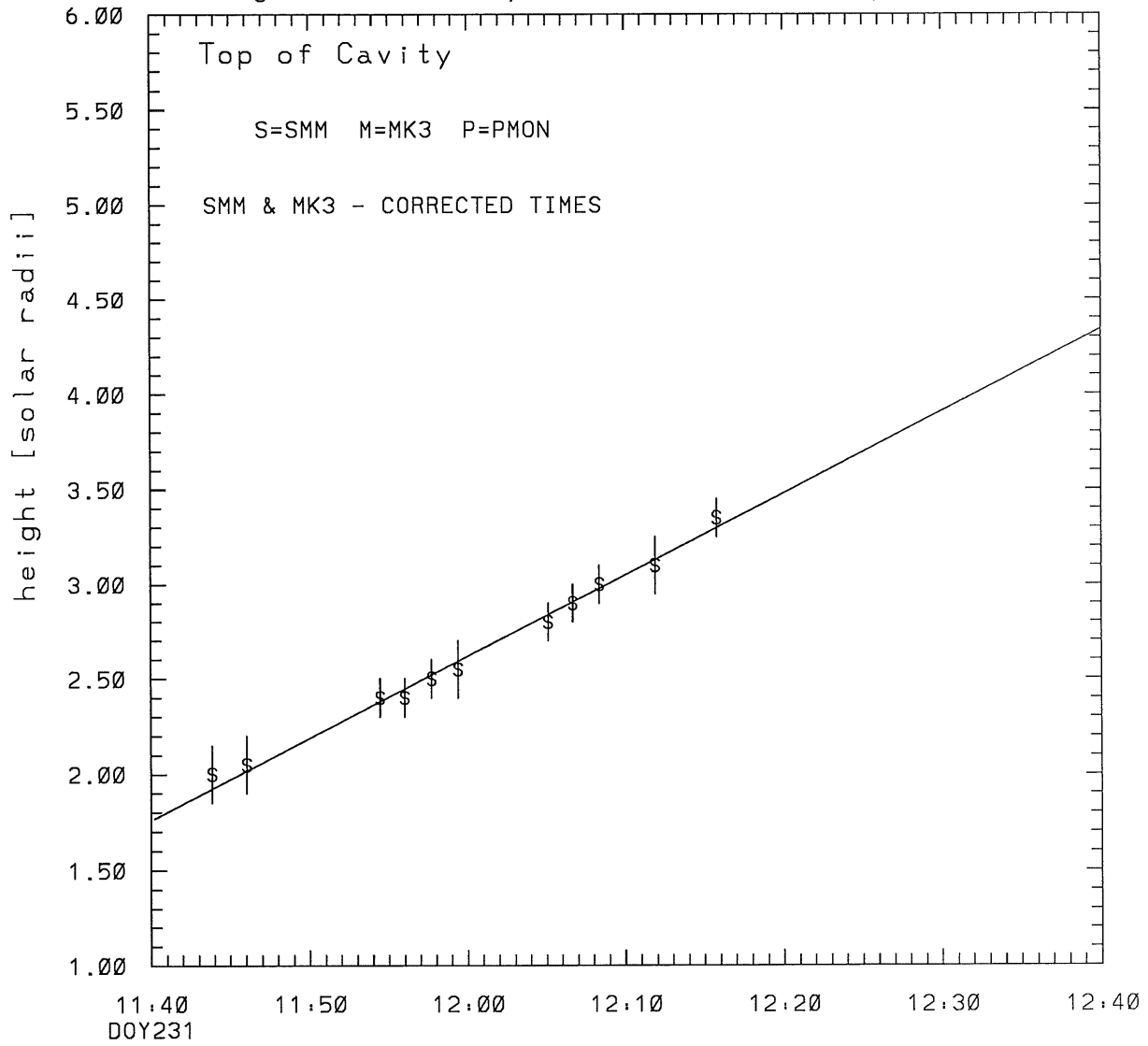The correlation between the data and the time**2 term =   0.9840E+00
The correlation between the data and the complete equation of motion =   0.9927E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]
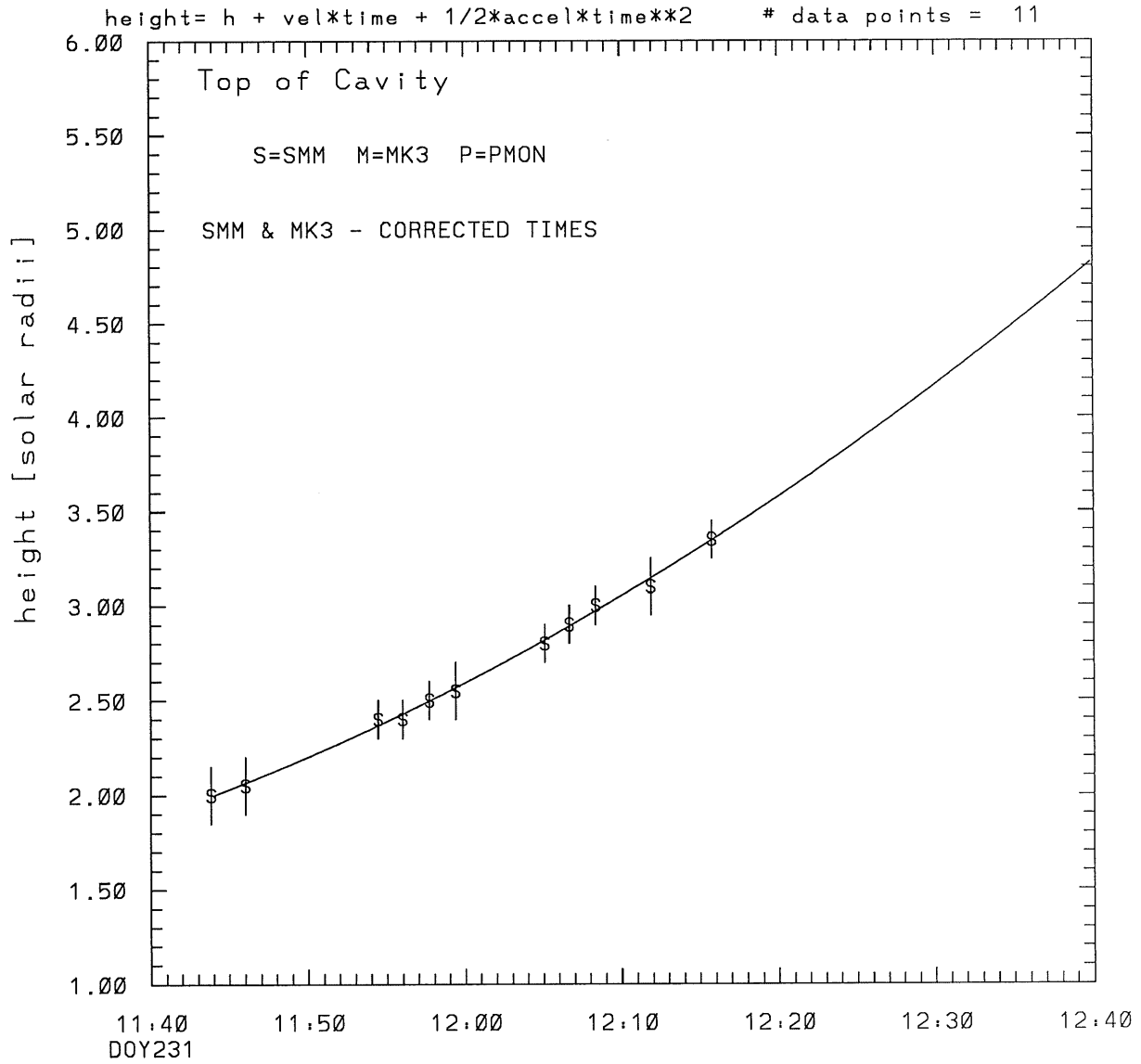
SMM C/P 1980 DOY231 113 +/- 0 degrees

height = h + velocity*time   # data points = 11

Top of Cavity

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

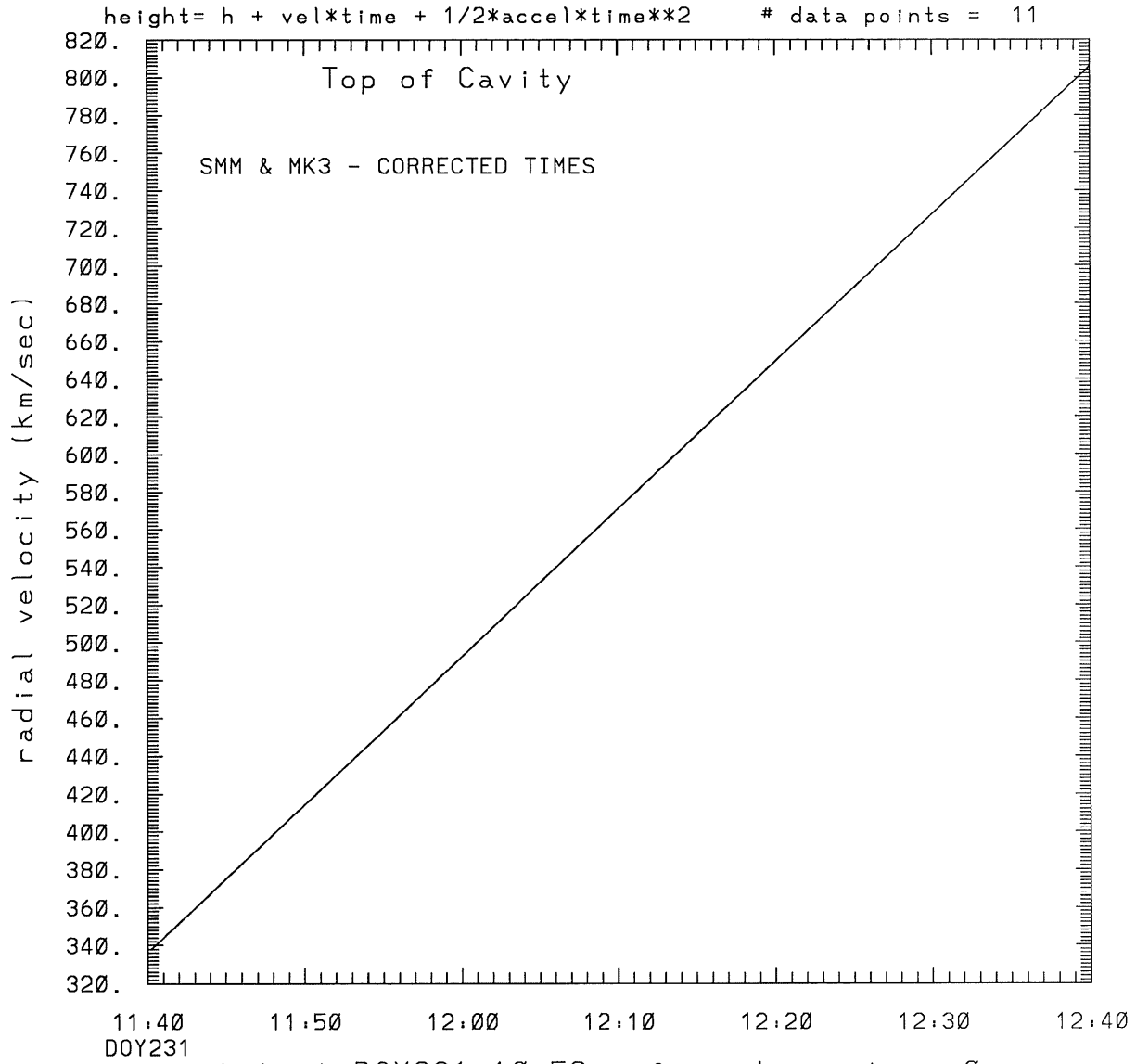11:40   11:50   12:00   12:10   12:20   12:30   12:40
DOY231

tstart=DOY231 11:24 +/-   0.2 [min.]
radial velocity= 499. +/- 15. [km/sec]

SMM C/P   1980 DOY231   113 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points = 11

Top of Cavity

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

11:40   11:50   12:00   12:10   12:20   12:30   12:40
DOY231

tstart=DOY231 10:58   from derivative=0
Event begins at   1.26 Solar Radii
radial acceleration= 0.1305 +/- 0.0323 [km/sec**2]

SMM C/P   1980 DOY231   113 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   11

Top of Cavity

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

820.
800.
780.
760.
740.
720.
700.
680.
660.
640.
620.
600.
580.
560.
540.
520.
500.
480.
460.
440.
420.
400.
380.
360.
340.
320.

11:40   11:50   12:00   12:10   12:20   12:30   12:40
DOY231

tstart=DOY231 10:58   from derivative=0
Event begins at   1.26 Solar Radii
radial acceleration=0.130E+00 km/sec**2

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

```
*******
 INPUT:
*******
```

			error in	error in		
year doy	time	radii	radius	angle	angle	datatype
1980 231	11:43:51	2.00 +/- 0.15		113.0 +/- 0.5		SMM
1980 231	11:46: 2	2.05 +/- 0.15		113.0 +/- 0.5		SMM
1980 231	11:54:27	2.40 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	11:56: 1	2.40 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	11:57:43	2.50 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	11:59:24	2.55 +/- 0.15		113.0 +/- 0.5		SMM
1980 231	12: 5: 7	2.80 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	12: 6:41	2.90 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	12: 8:23	3.00 +/- 0.10		113.0 +/- 1.0		SMM
1980 231	12:11:54	3.10 +/- 0.15		113.0 +/- 1.0		SMM
1980 231	12:15:47	3.35 +/- 0.10		113.0 +/- 1.0		SMM

```
****************************************
 Structure being measured:
Top of Cavity
****************************************
```

```
********
 OUTPUT:
********
```

START TIME:

Event began at t = 0 + -0.176E+02 +/- 0.155E+00 [minutes]
In more convenient units:
Event began at DOY 231 11:24 +/- 0.155E+00 [minutes]

Origin defined at DOY231 11:40

RADIAL INFORMATION:

RADIAL VELOCITY = 499. +/- 15. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

```
c(1) =   0.176E+01 +/-   0.313E-01 [solar radii]
c(2) =   0.430E-01 +/-   0.133E-02 [radii/min]
c(2) =   0.499E+03 +/-   0.154E+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)= 0.30918E-01 [radii] see Bevington pg. 114
error in c(2)= 0.13638E-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) = 113. +/- 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 11:43 = 0.000E+00 km/sec
The TOTAL velocity at 11:43 = 499. km/sec

The TANGENTIAL velocity at 11:46 = 0.000E+00 km/sec
The TOTAL velocity at 11:46 = 499. km/sec

The TANGENTIAL velocity at 11:54 = 0.000E+00 km/sec
The TOTAL velocity at 11:54 = 499. km/sec

The TANGENTIAL velocity at 11:56 = 0.000E+00 km/sec
The TOTAL velocity at 11:56 = 499. km/sec

The TANGENTIAL velocity at 11:57 = 0.000E+00 km/sec
The TOTAL velocity at 11:57 = 499. km/sec

The TANGENTIAL velocity at 11:59 = 0.000E+00 km/sec
The TOTAL velocity at 11:59 = 499. km/sec

The TANGENTIAL velocity at 12: 5 = 0.000E+00 km/sec
The TOTAL velocity at 12: 5 = 499. km/sec

The TANGENTIAL velocity at 12: 6 = 0.000E+00 km/sec
The TOTAL velocity at 12: 6 = 499. km/sec

The TANGENTIAL velocity at 12: 8 = 0.000E+00 km/sec
The TOTAL velocity at 12: 8 = 499. km/sec

The TANGENTIAL velocity at 12:11 = 0.000E+00 km/sec
The TOTAL velocity at 12:11 = 499. km/sec

The TANGENTIAL velocity at 12:15 = 0.000E+00 km/sec
The TOTAL velocity at 12:15 = 499. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.43
Standard Deviation in start time measurement =   0.971E+01
Error in time =   0.30638E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.151E-02
Reduced Chi Squared = 0.947E-02
Chi Squared = 0.852E-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 =   0.8892E-10
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
1980 231	11:43:51	2.00 +/- 0.15		113.0 +/- 0.5		SMM
1980 231	11:46: 2	2.05 +/- 0.15		113.0 +/- 0.5		SMM
1980 231	11:54:27	2.40 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	11:56: 1	2.40 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	11:57:43	2.50 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	11:59:24	2.55 +/- 0.15		113.0 +/- 0.5		SMM
1980 231	12: 5: 7	2.80 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	12: 6:41	2.90 +/- 0.10		113.0 +/- 0.5		SMM
1980 231	12: 8:23	3.00 +/- 0.10		113.0 +/- 1.0		SMM
1980 231	12:11:54	3.10 +/- 0.15		113.0 +/- 1.0		SMM
1980 231	12:15:47	3.35 +/- 0.10		113.0 +/- 1.0		SMM

```
*****************************************
 Structure being measured:
Top of Cavity
*****************************************


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


START TIME:

 tstart=DOY231 10:58 from derivative = 0
Event begins at   1.26 Solar Radii
 Origin defined at DOY231 11:40


RADIAL INFORMATION:

RADIAL ACCELERATION =  0.130E+00 +/-  0.323E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =   0.188E+01 +/-   0.356E-01 [solar radii]
 c(2) =   0.290E-01 +/-   0.358E-02 [radii/min]
 c(2) =   0.336E+03 +/-   0.415E+02 [km/sec]
 c(3) =   0.337E-03 +/-   0.835E-04 [radii/min**2]
 c(3) =   0.130E+00 +/-   0.323E-01 [km/sec**2]

 The computed ERRORS in coefficients [BEVINGTON] are:

        Approximate error in c(1) =  0.30736E-01 [radii] Bevington pg 154 (8-30)
              Exact error in c(1) =  0.28393E-02 [radii] Bevington pg 154 (8-28)
```

Approximate error in c(2) = 0.34321E-02 [radii/min] Bevington pg 154 (8-30)
     Exact error in c(2) = 0.29085E-03 [radii/min] Bevington pg 154 (8-28)
Approximate error in c(3) = 0.85423E-04 [radii/min**] Bevington pg 154 (8-30)
     Exact error in c(3) = 0.65136E-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) = 113. +/-   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 11:43 = 0.000E+00 km/sec
The TOTAL velocity at 11:43 = 366. km/sec

The TANGENTIAL velocity at 11:46 = 0.000E+00 km/sec
The TOTAL velocity at 11:46 = 383. km/sec

The TANGENTIAL velocity at 11:54 = 0.000E+00 km/sec
The TOTAL velocity at 11:54 = 449. km/sec

The TANGENTIAL velocity at 11:56 = 0.000E+00 km/sec
The TOTAL velocity at 11:56 = 461. km/sec

The TANGENTIAL velocity at 11:57 = 0.000E+00 km/sec
The TOTAL velocity at 11:57 = 475. km/sec

The TANGENTIAL velocity at 11:59 = 0.000E+00 km/sec
The TOTAL velocity at 11:59 = 488. km/sec

The TANGENTIAL velocity at 12: 5 = 0.000E+00 km/sec
The TOTAL velocity at 12: 5 = 533. km/sec

The TANGENTIAL velocity at 12: 6 = 0.000E+00 km/sec
The TOTAL velocity at 12: 6 = 545. km/sec

The TANGENTIAL velocity at 12: 8 = 0.000E+00 km/sec
The TOTAL velocity at 12: 8 = 558. km/sec

The TANGENTIAL velocity at 12:11 = 0.000E+00 km/sec
The TOTAL velocity at 12:11 = 586. km/sec

The TANGENTIAL velocity at 12:15 = 0.000E+00 km/sec
The TOTAL velocity at 12:15 = 616. km/sec

```
**********************************************************
   The following info is for estimating goodness of the fit
**********************************************************
```
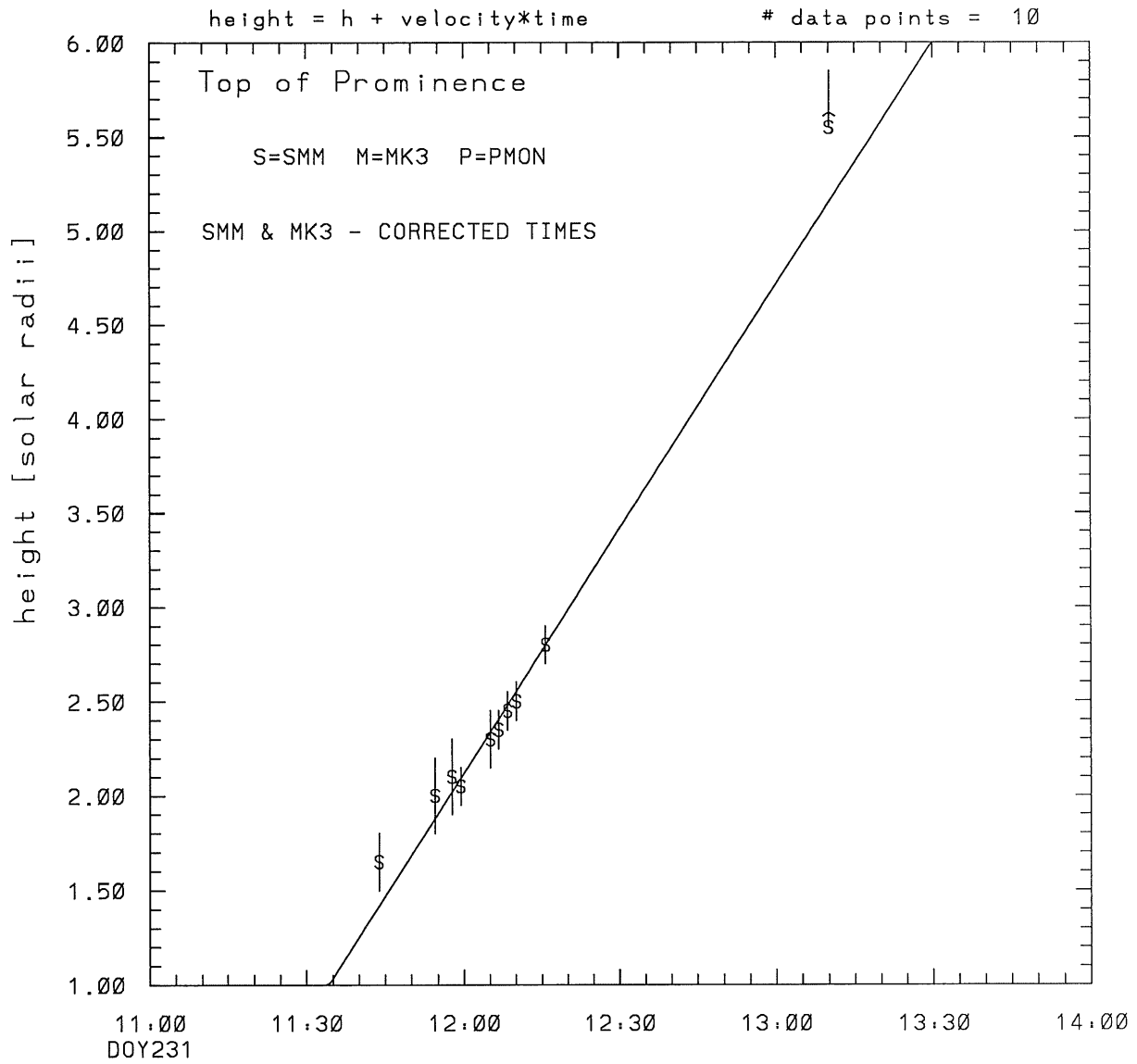
Fit is ok [ier=1]

Standard Deviation in the height = 0.43
Standard Deviation in start time measurement =   0.971E+01
Value of reduced Chi Squared returned from nllst2 = 0.596E-03
Reduced Chi Squared = 0.492E-02
Chi Squared = 0.393E-01
The probability for exceeding chi square = 0.100E+01

For a second order fit 3 correlation coefficients are given:
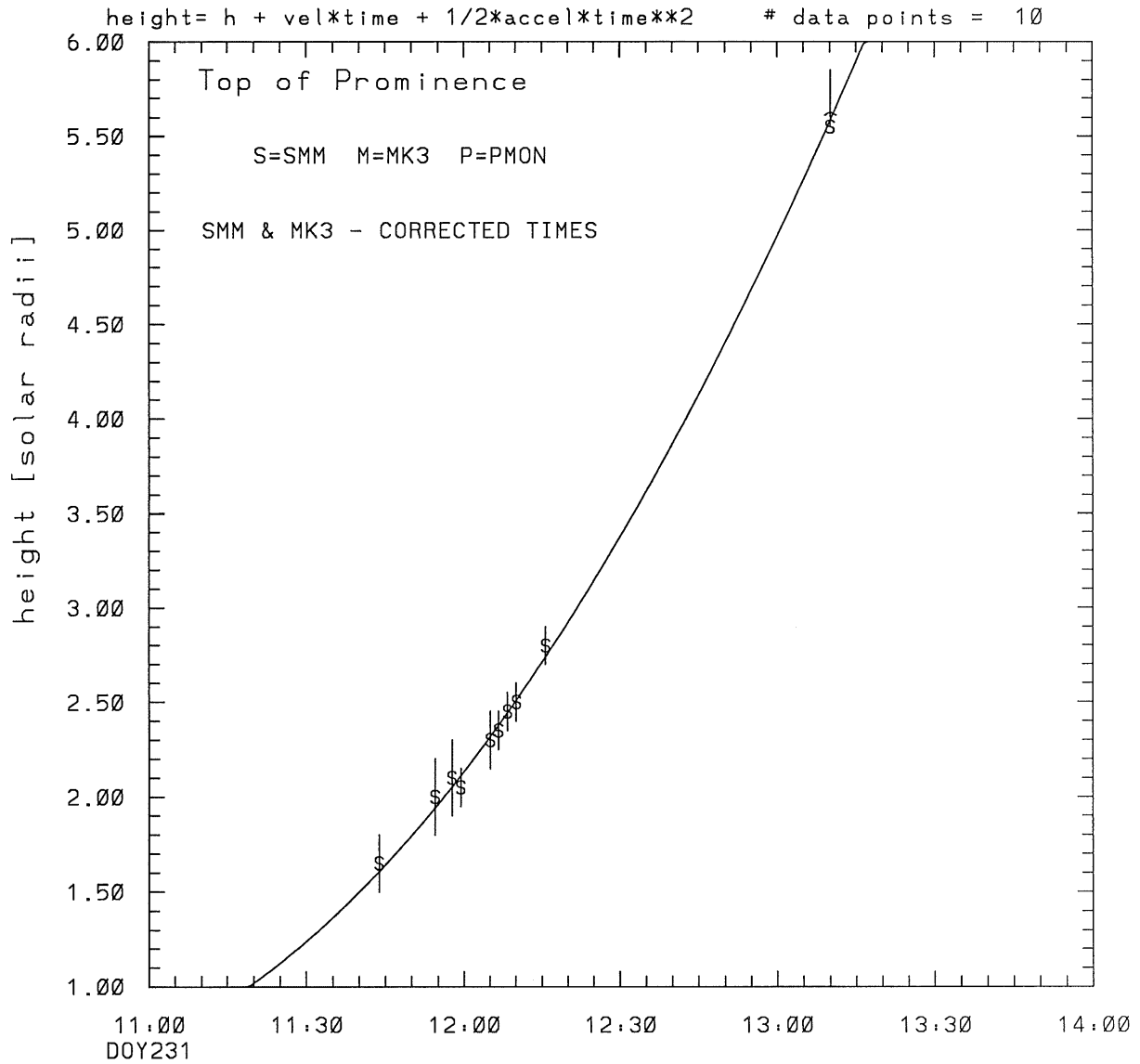 (Using equation of motion: r = a + bt + at**2)
The correlation between the data and the term linear in time =   0.9117E+00
The correlation between the data and the time**2 term =   0.9561E+00
The correlation between the data and the complete equation of motion =   0.9954E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

SMM C/P 1980 DOY231 118 +/- 0 degrees

height = h + velocity*time   # data points = 10

Top of Prominence

S=SMM   M=MK3   P=PMON

SMM & MK3 - CORRECTED TIMES

height [solar radii]

tstart=DOY231 11:34 +/-   2.9 [min.]
radial velocity= 502. +/-   31. [km/sec]

SMM C/P 1980 DOY231 118 +/- 0 degrees

SMM C/P   1980 DOY231   118 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   10

Top of Prominence

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

1000.
950.
900.
850.
800.
750.
700.
650.
600.
550.
500.
450.
400.
350.
300.
250.
200.
150.
100.

11:00   11:30   12:00   12:30   13:00   13:30   14:00
DOY231

tstart=DOY231 11:19 +/-   2.7 [min.]

radial acceleration=0.752E-01 km/sec**2

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


*******
 INPUT:
*******
```

year	doy	time	radii	error in radius	angle	error in angle	datatype	
1980	231	11:43:51	1.65 +/- 0.15		118.0 +/- 0.5		SMM	
1980	231	11:54:27	2.00 +/- 0.20		118.0 +/- 0.5		SMM	
1980	231	11:57:43	2.10 +/- 0.20		118.0 +/- 0.5		SMM	
1980	231	11:59:24	2.05 +/- 0.10		118.0 +/- 0.5		SMM	
1980	231	12: 5: 7	2.30 +/- 0.15		118.0 +/- 0.5		SMM	
1980	231	12: 6:41	2.35 +/- 0.10		118.0 +/- 0.5		SMM	
1980	231	12: 8:23	2.45 +/- 0.10		118.0 +/- 0.5		SMM	
1980	231	12:10: 8	2.50 +/- 0.10		118.0 +/- 0.5		SMM	
1980	231	12:15:47	2.80 +/- 0.10		118.0 +/- 0.5		SMM	
1980	231	13:10: 8	5.55 +/- 0.30		118.0 +/- 1.0		SMM	THIS POINT IS A LOWER LIMIT.

```
*****************************************
 Structure being measured:
Top of Prominence
*****************************************


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


START TIME:

Event began at t = 0 +  0.342E+02 +/-  0.286E+01 [minutes]
In more convenient units:
Event began at DOY 231 11:34 +/-  0.286E+01 [minutes]


Origin defined at DOY231 11: 0


RADIAL INFORMATION:


RADIAL VELOCITY =   502. +/-    31. km/sec


The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =   -0.478E+00 +/-   0.179E+00 [solar radii]
c(2) =    0.432E-01 +/-   0.266E-02 [radii/min]
c(2) =    0.502E+03 +/-   0.308E+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)=  0.18228E+00 [radii] see Bevington pg. 114
```

error in c(2)= 0.25108E-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) = 118. +/-   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 11:43 = 0.000E+00 km/sec
The TOTAL velocity at 11:43 = 502. km/sec

The TANGENTIAL velocity at 11:54 = 0.000E+00 km/sec
The TOTAL velocity at 11:54 = 502. km/sec

The TANGENTIAL velocity at 11:57 = 0.000E+00 km/sec
The TOTAL velocity at 11:57 = 502. km/sec

The TANGENTIAL velocity at 11:59 = 0.000E+00 km/sec
The TOTAL velocity at 11:59 = 502. km/sec

The TANGENTIAL velocity at 12: 5 = 0.000E+00 km/sec
The TOTAL velocity at 12: 5 = 502. km/sec

The TANGENTIAL velocity at 12: 6 = 0.000E+00 km/sec
The TOTAL velocity at 12: 6 = 502. km/sec

The TANGENTIAL velocity at 12: 8 = 0.000E+00 km/sec
The TOTAL velocity at 12: 8 = 502. km/sec

The TANGENTIAL velocity at 12:10 = 0.000E+00 km/sec
The TOTAL velocity at 12:10 = 502. km/sec

The TANGENTIAL velocity at 12:15 = 0.000E+00 km/sec
The TOTAL velocity at 12:15 = 502. km/sec

The TANGENTIAL velocity at 13:10 = 0.000E+00 km/sec
The TOTAL velocity at 13:10 = 502. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 1.09

Standard Deviation in start time measurement =   0.221E+02
Error in time =   0.11458E+02 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.965E-02
Reduced Chi Squared = 0.221E+00
Chi Squared = 0.177E+01
The probability for exceeding chi square = 0.100E+01

The correlation coefficient =   0.993E+00
The probability that no LINEAR correlation exists between the variables = -0.3308E-08
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	
1980 231	11:43:51	1.65	+/- 0.15	118.0	+/- 0.5	SMM	
1980 231	11:54:27	2.00	+/- 0.20	118.0	+/- 0.5	SMM	
1980 231	11:57:43	2.10	+/- 0.20	118.0	+/- 0.5	SMM	
1980 231	11:59:24	2.05	+/- 0.10	118.0	+/- 0.5	SMM	
1980 231	12: 5: 7	2.30	+/- 0.15	118.0	+/- 0.5	SMM	
1980 231	12: 6:41	2.35	+/- 0.10	118.0	+/- 0.5	SMM	
1980 231	12: 8:23	2.45	+/- 0.10	118.0	+/- 0.5	SMM	
1980 231	12:10: 8⁴	2.50	+/- 0.10	118.0	+/- 0.5	SMM	
1980 231	12:15:47	2.80	+/- 0.10	118.0	+/- 0.5	SMM	
1980 231	13:10: 8	5.55	+/- 0.30	118.0	+/- 1.0	SMM	THIS POINT IS A LOWER LIMIT.

```
******************************************
 Structure being measured:
Top of Prominence
******************************************


********
 OUTPUT:
********
```

START TIME:

Event began at t = 0 + 0.190E+02 +/- 0.272E+01 [minutes]
In more convenient units:
Event began at DOY 231 11:19 +/- 0.272E+01 [minutes]

Origin defined at DOY231 11: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.752E-01 +/- 0.128E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1)$ = 0.697E+00 +/- 0.216E+00 [solar radii]
$c(2)$ = 0.122E-01 +/- 0.541E-02 [radii/min]
$c(2)$ = 0.142E+03 +/- 0.627E+02 [km/sec]
$c(3)$ = 0.194E-03 +/- 0.330E-04 [radii/min**2]
$c(3)$ = 0.752E-01 +/- 0.128E-01 [km/sec**2]

The computed ERRORS in coefficients [BEVINGTON] are:

   Approximate error in $c(1)$ = 0.20350E+00 [radii] Bevington pg 154 (8-30)

Exact error in c(1) = 0.58832E-01 [radii] Bevington pg 154 (8-28)
Approximate error in c(2) = 0.49779E-02 [radii/min] Bevington pg 154 (8-30)
Exact error in c(2) = 0.13426E-02 [radii/min] Bevington pg 154 (8-28)
Approximate error in c(3) = 0.27306E-04 [radii/min**] Bevington pg 154 (8-30)
Exact error in c(3) = 0.70842E-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) = 118. +/- 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 11:43 = 0.000E+00 km/sec
The TOTAL velocity at 11:43 = 340. km/sec

The TANGENTIAL velocity at 11:54 = 0.000E+00 km/sec
The TOTAL velocity at 11:54 = 388. km/sec

The TANGENTIAL velocity at 11:57 = 0.000E+00 km/sec
The TOTAL velocity at 11:57 = 402. km/sec

The TANGENTIAL velocity at 11:59 = 0.000E+00 km/sec
The TOTAL velocity at 11:59 = 410. km/sec

The TANGENTIAL velocity at 12: 5 = 0.000E+00 km/sec
The TOTAL velocity at 12: 5 = 436. km/sec

The TANGENTIAL velocity at 12: 6 = 0.000E+00 km/sec
The TOTAL velocity at 12: 6 = 443. km/sec

The TANGENTIAL velocity at 12: 8 = 0.000E+00 km/sec
The TOTAL velocity at 12: 8 = 451. km/sec

The TANGENTIAL velocity at 12:10 = 0.000E+00 km/sec
The TOTAL velocity at 12:10 = 458. km/sec

The TANGENTIAL velocity at 12:15 = 0.000E+00 km/sec
The TOTAL velocity at 12:15 = 484. km/sec

The TANGENTIAL velocity at 13:10 = 0.000E+00 km/sec
The TOTAL velocity at 13:10 = 729. km/sec

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

****

Fit is ok [ier=1]

Standard Deviation in the height = 1.09
Standard Deviation in start time measurement = 0.221E+02
Value of reduced Chi Squared returned from nllst2 = 0.204E-02
Reduced Chi Squared = 0.114E-01
Chi Squared = 0.801E-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 = 0.5333E+00
The correlation between the data and the time**2 term = 0.5066E+00
The correlation between the data and the complete equation of motion = 0.9905E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]