SMM C/P 1980 DOY102 260 +/-   0 degrees

height = h + velocity*time   # data pts used = 4

Top of Southern 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

7:00   7:30   8:00   8:30   9:00   9:30   10:00
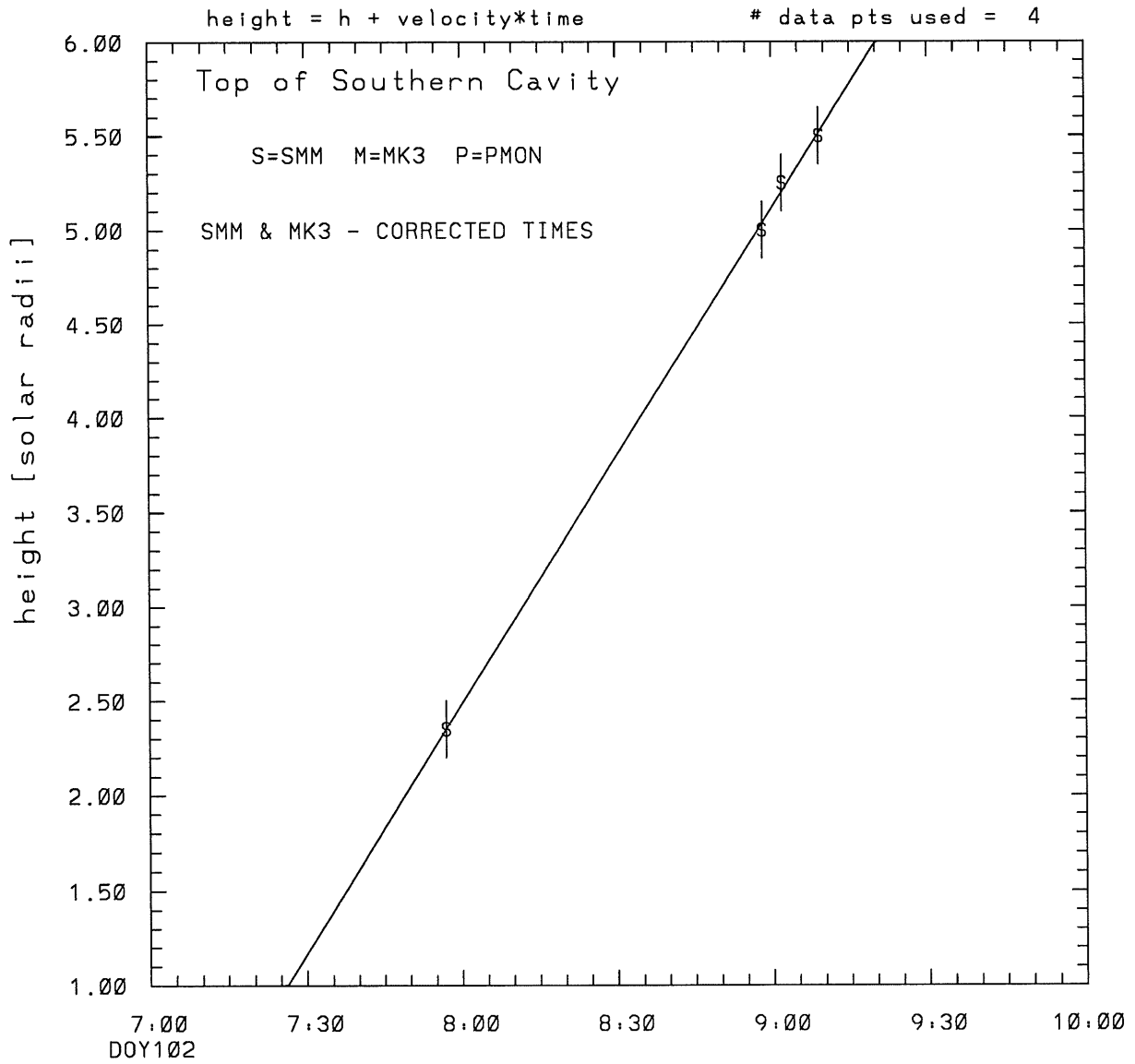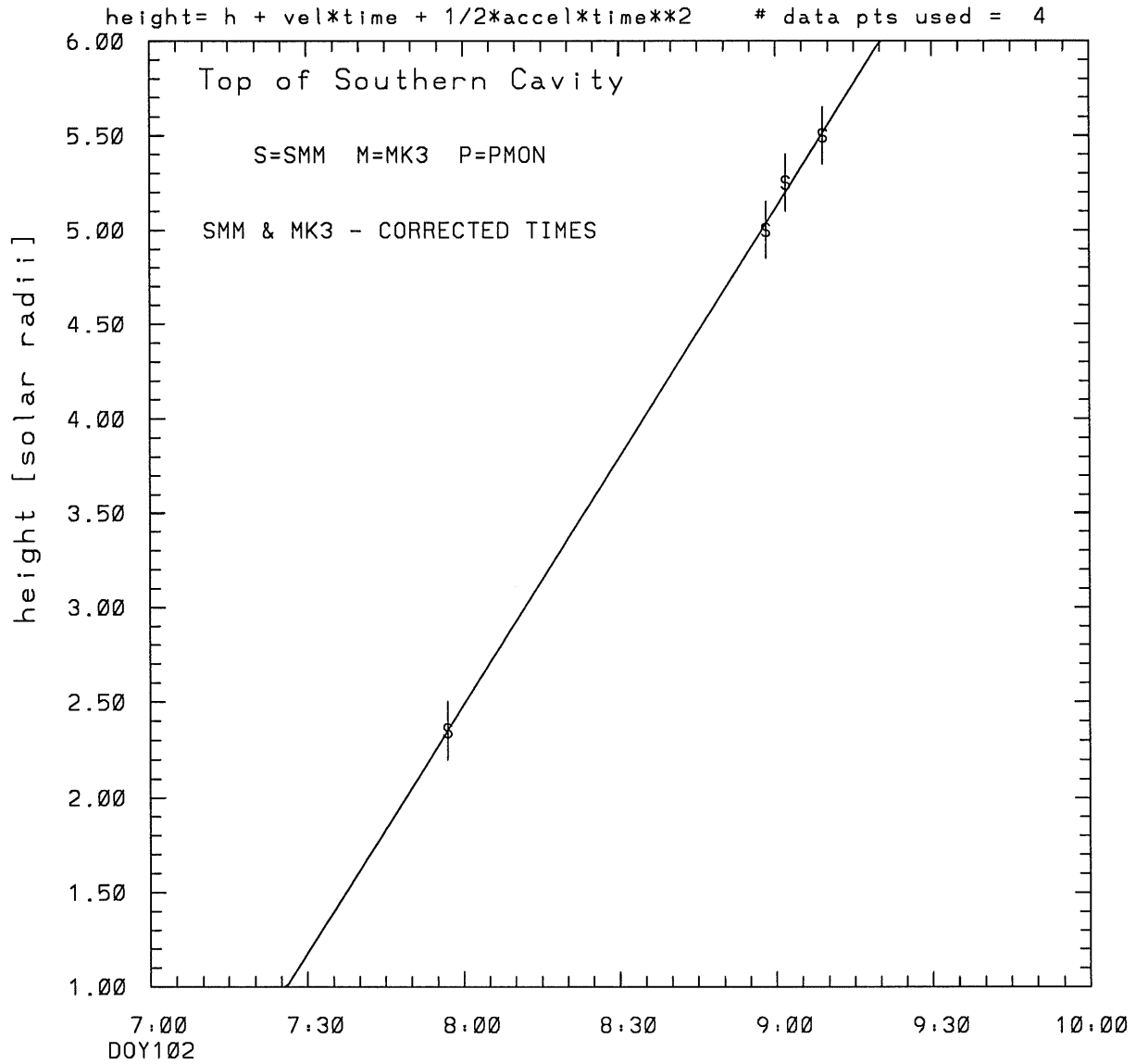DOY102

tstart=DOY102 7:26 +/-   1.3 [min.]
radial velocity= 509. +/-   7. [km/sec]

SMM C/P 1980 DOY102 260 +/- 0 degrees

height= h + vel*time + 1/2*accel*time**2   # data pts used = 4

Top of Southern 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

7:00   7:30   8:00   8:30   9:00   9:30   10:00
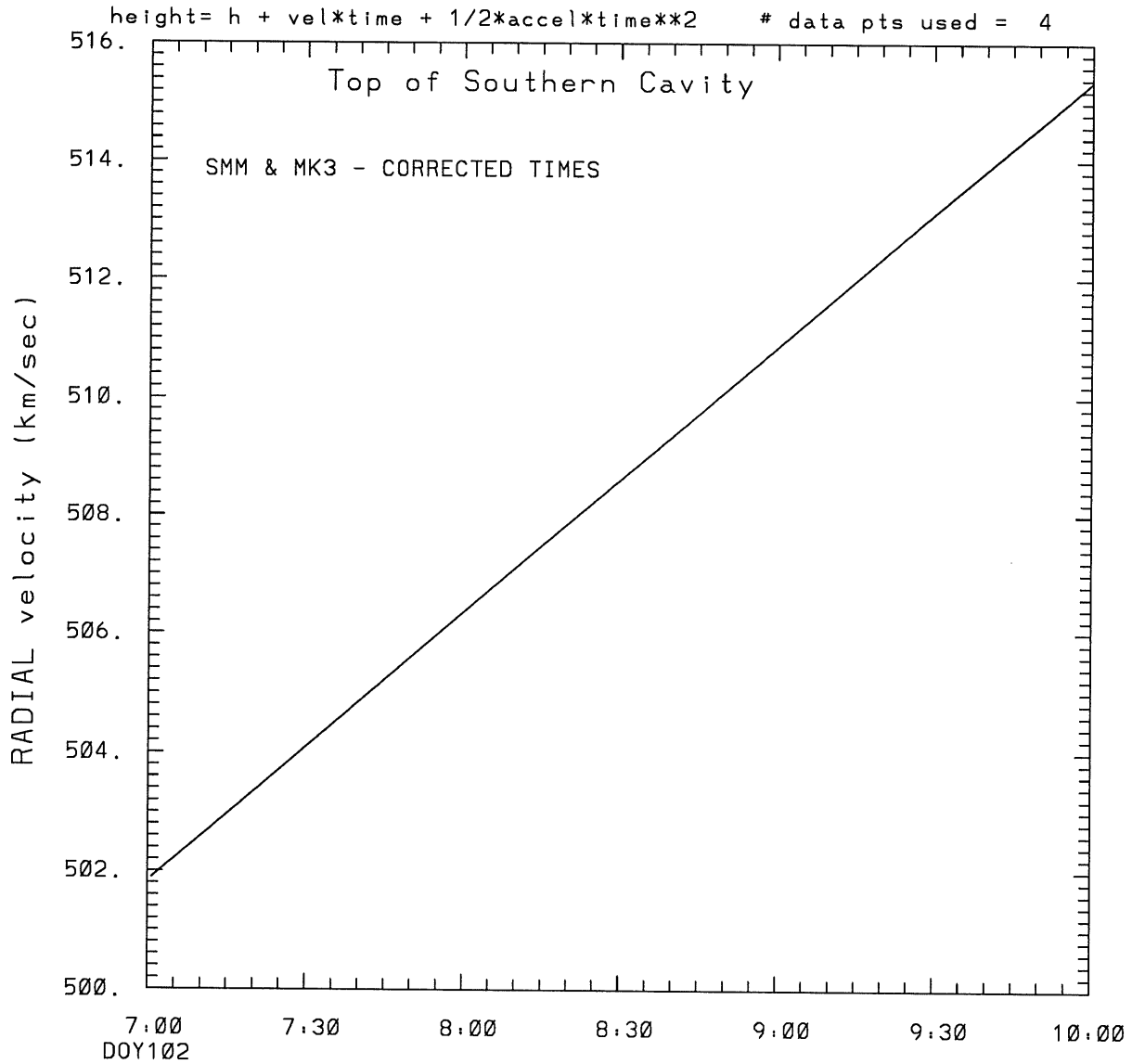DOY102

tstart=DOY102   7:26 +/-   493.8 [min.]

radial acceleration= 0.0013 +/- 0.0317 [km/sec**2]

SMM C/P 1980 DOY102 260 +/- 0 degrees

height= h + vel*time + 1/2*accel*time**2   # data pts used = 4

Top of Southern Cavity

SMM & MK3 - CORRECTED TIMES

RADIAL velocity (km/sec)

516.

514.

512.

510.

508.

506.

504.

502.

500.

7:00   7:30   8:00   8:30   9:00   9:30   10:00
DOY102

tstart=DOY102 7:26 +/-   493.8 [min.]

radial acceleration=0.125E-02 km/sec**2

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

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

                                error in         error in
year doy      time     radii   radius     angle    angle   datatype
1980 102   7:56:56    2.35 +/- 0.15    260.0 +/-  0.5       SMM
1980 102   8:58:10    5.00 +/- 0.15    260.0 +/-  1.0       SMM
1980 102   9: 1:59    5.25 +/- 0.15    260.0 +/-  1.0       SMM
1980 102   9: 9: 6    5.50 +/- 0.15    260.0 +/-  1.0       SMM


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

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

START TIME:

 Event began at t = 0 +  0.262E+02 +/-  0.128E+01 [minutes]
 In more convenient units:
 Event began at DOY 102   7:26 +/-  0.128E+01 [minutes]

 Origin defined at DOY102   7: 0

RADIAL INFORMATION:

RADIAL VELOCITY =    509. +/-      7. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

   c(1) =    -0.147E+00 +/-     0.671E-01 [solar radii]
   c(2) =     0.438E-01 +/-     0.608E-03 [radii/min]
   c(2) =     0.509E+03 +/-     0.705E+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)=  0.82142E-01 [radii] see Bevington pg. 114
                 error in c(2)=  0.74405E-03 [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) = 260. +/-    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 RADIAL velocity at  7:56 =  509. km/sec

The RADIAL velocity at  8:58 =  509. km/sec

The RADIAL velocity at  9: 1 =  509. km/sec
```

The RADIAL velocity at 9: 9 = 509. km/sec


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

Fit is ok [ier=1]

Standard Deviation in the height = 1.46
Standard Deviation in start time measurement =   0.289E+02
Error in time =   0.13875E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.123E-02
Reduced Chi Squared = 0.505E-02
Chi Squared = 0.101E-01
The probability for exceeding chi square = 0.999E+00

The correlation coefficient =   0.100E+01
The probability that no LINEAR correlation exists between the variables =   0.28861
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
1980 102    7:56:56    2.35 +/- 0.15       260.0 +/-  0.5       SMM
1980 102    8:58:10    5.00 +/- 0.15       260.0 +/-  1.0       SMM
1980 102    9: 1:59    5.25 +/- 0.15       260.0 +/-  1.0       SMM
1980 102    9: 9: 6    5.50 +/- 0.15       260.0 +/-  1.0       SMM


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

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

START TIME:

 Event began at t = 0 +  0.259E+02 +/-  0.494E+03 [minutes]
 In more convenient units:
 Event began at DOY 102  7:26 +/-  0.494E+03 [minutes]

 Origin defined at DOY102  7: 0

RADIAL INFORMATION:

RADIAL ACCELERATION =  0.125E-02 +/-  0.317E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =    -0.124E+00 +/-     0.592E+00 [solar radii]
 c(2) =     0.433E-01 +/-     0.149E-01 [radii/min]
 c(2) =     0.502E+03 +/-     0.173E+03 [km/sec]
 c(3) =     0.324E-05 +/-     0.820E-04 [radii/min**2]
 c(3) =     0.125E-02 +/-     0.317E-01 [km/sec**2]

 The computed ERRORS in coefficients [BEVINGTON] are:

    Approximate error in c(1) =  0.83762E+00 [radii] Bevington pg 154 (8-30)
        Exact error in c(1) =  0.43939E+00 [radii] Bevington pg 154 (8-28)
    Approximate error in c(2) =  0.21070E-01 [radii/min] Bevington pg 154 (8-30)
        Exact error in c(2) =  0.11166E-01 [radii/min] Bevington pg 154 (8-28)
    Approximate error in c(3) =  0.11590E-03 [radii/min**2] Bevington pg 154 (8-30)
        Exact error in c(3) =  0.60589E-04 [radii/min**2] 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) = 260. +/-    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 RADIAL velocity at  7:56 =  506. km/sec
```

The RADIAL velocity at   8:58 =   511. km/sec

The RADIAL velocity at   9: 1 =   511. km/sec

The RADIAL velocity at   9: 9 =   512. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 1.46
Standard Deviation in start time measurement =   0.289E+02
Value of reduced Chi Squared returned from nllst2 = 0.185E-02
Reduced Chi Squared = 0.102E-01
Chi Squared = 0.102E-01
The probability for exceeding chi square = 0.966E+00

For a second order fit 3 correlation coefficients are given:
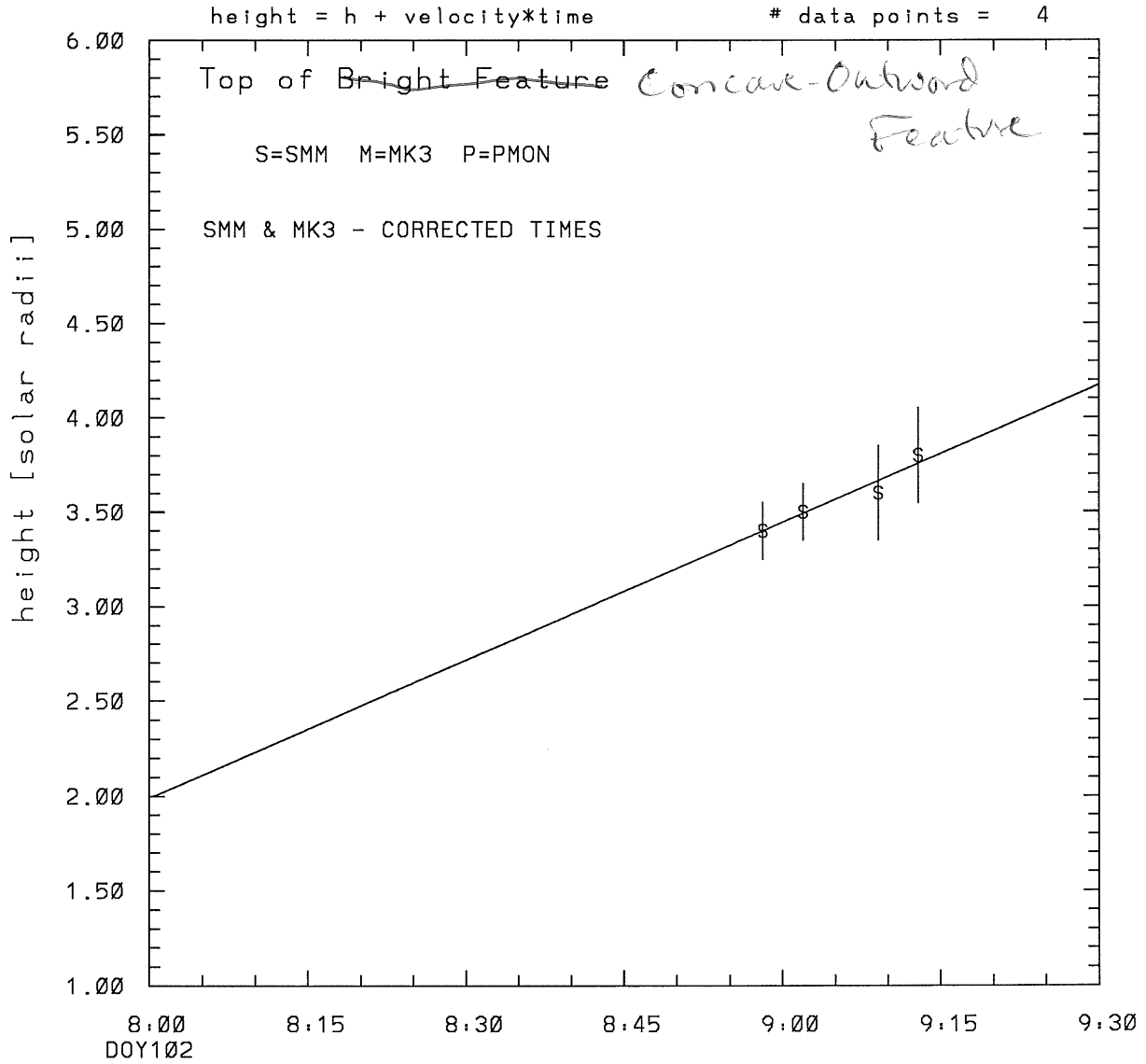 (Using equation of motion: r = a + bt + at**2)
The correlation between the data and the term linear in time =   0.9997E+00
The correlation between the data and the time**2 term =   0.9985E+00
The correlation between the data and the complete equation of motion=0.9994E+00
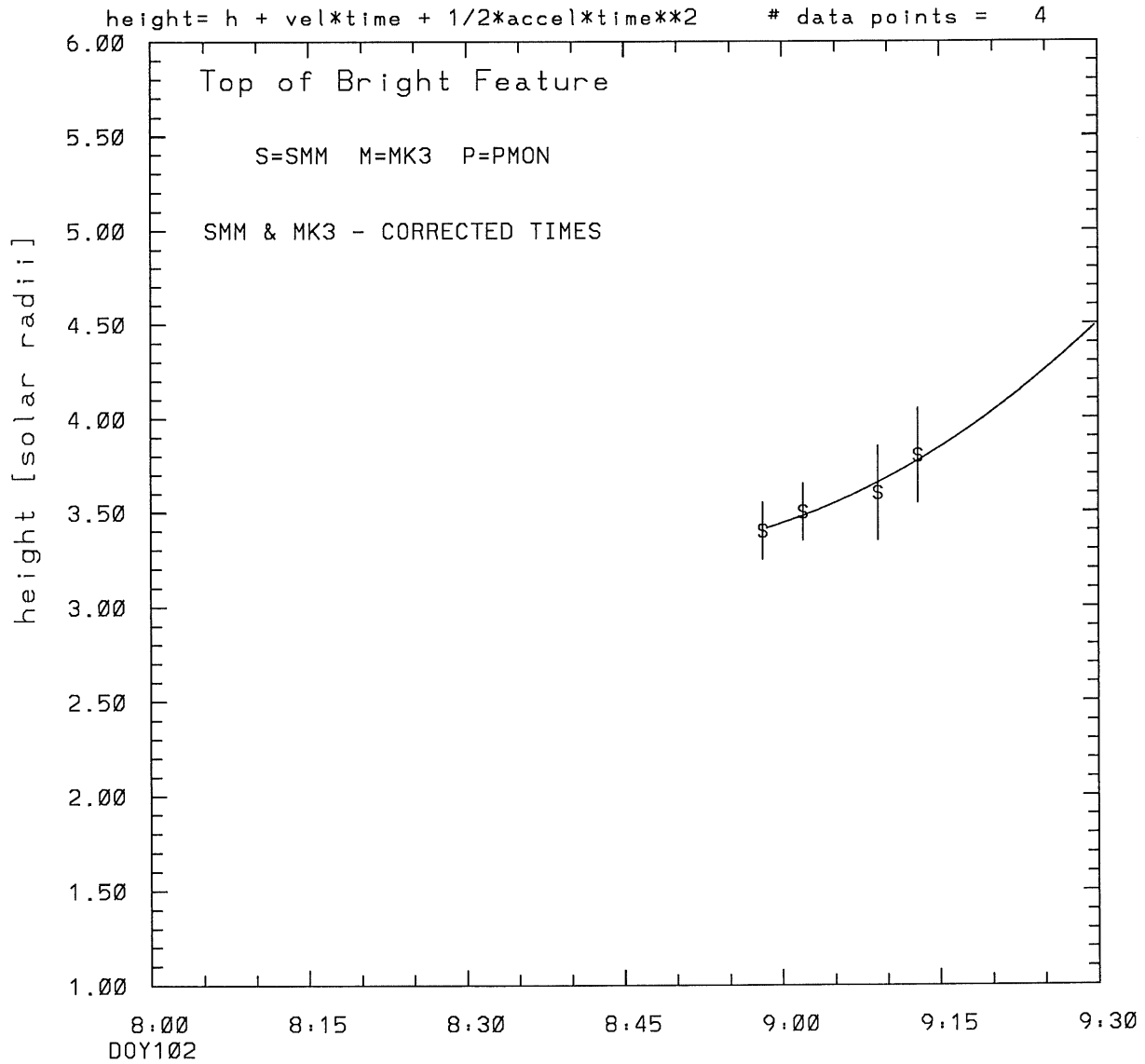SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

SMM C/P 1980 DOY102 280 +/- 0 degrees

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

Top of Bright Feature *Concave-Outward Feature*

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

8:00   8:15   8:30   8:45   9:00   9:15   9:30
DOY102

tstart=DOY102 7:21 +/-   2.3 [min.]
radial velocity= 282. +/- 37. [km/sec]

SMM C/P 1980 DOY102 280 +/- 0 degrees

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

Top of Bright Feature

S=SMM   M=MK3   P=PMON

SMM & MK3 - CORRECTED TIMES

height [solar radii]

6.00
5.50
5.00
4.50
4.00
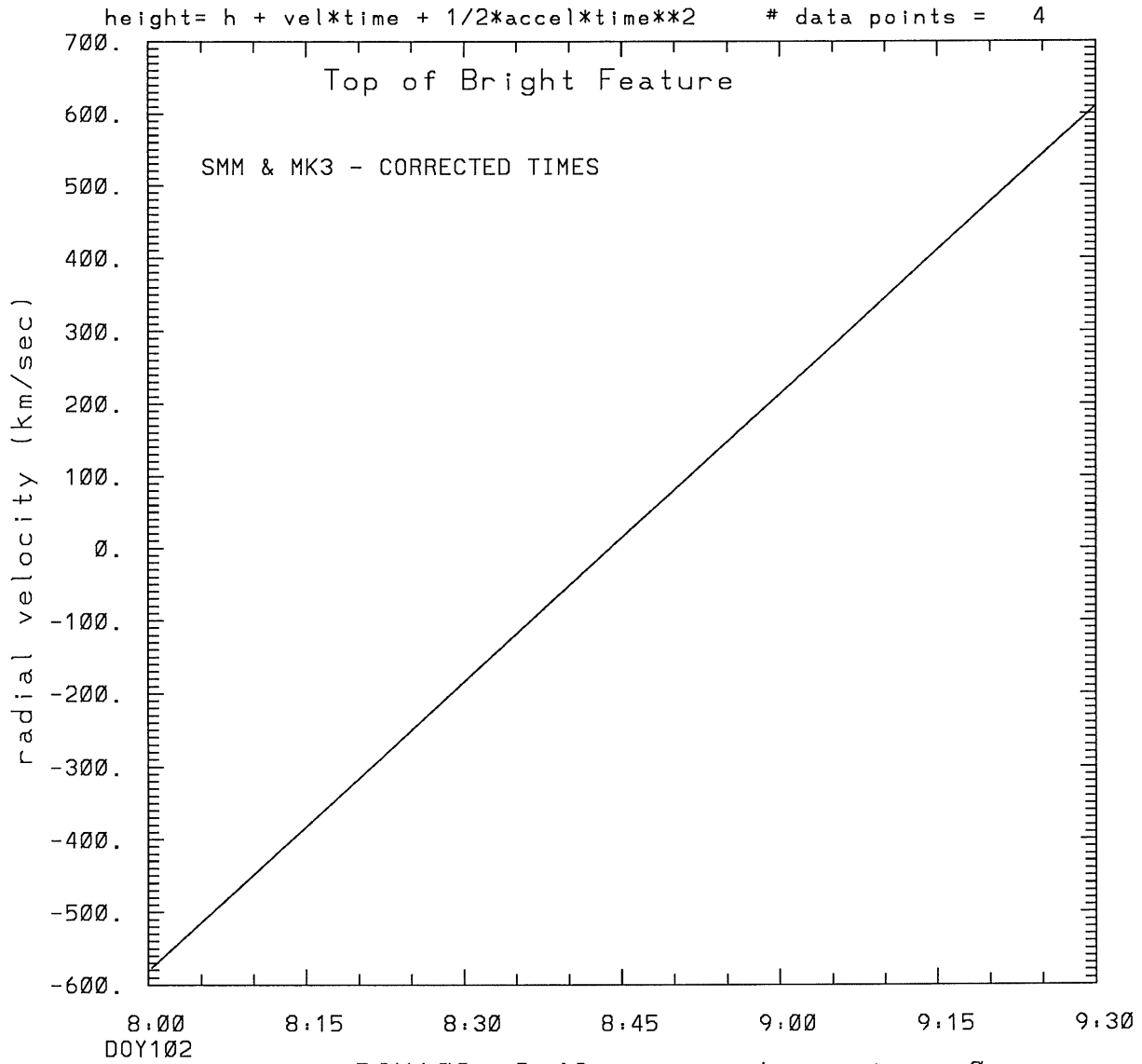3.50
3.00
2.50
2.00
1.50
1.00

8:00   8:15   8:30   8:45   9:00   9:15   9:30
DOY102

tstart=DOY102 8:43   from derivative=0
Event begins at   3.29 Solar Radii
radial acceleration= 0.2205 +/- 0.3496 [km/sec**2]

SMM C/P 1980 DOY102 280 +/- 0 degrees

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

Top of Bright Feature

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

700.
600.
500.
400.
300.
200.
100.
0.
-100.
-200.
-300.
-400.
-500.
-600.

8:00   8:15   8:30   8:45   9:00   9:15   9:30
DOY102

tstart=DOY102 8:43   from derivative=0
Event begins at   3.29 Solar Radii
radial acceleration=0.221E+00 km/sec**2

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

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

			error in		error in		
year doy	time	radii	radius	angle	angle	datatype
1980 102	8:58:10	3.40 +/- 0.15	280.0 +/- 1.0	SMM
1980 102	9: 1:59	3.50 +/- 0.15	280.0 +/- 1.0	SMM
1980 102	9: 9: 6	3.60 +/- 0.25	280.0 +/- 1.0	SMM
1980 102	9:12:54	3.80 +/- 0.25	280.0 +/- 1.0	SMM

```
******************************************
```
Structure being measured:
Top of Bright Feature
```
******************************************
```
(Concave Outward)

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

START TIME:

Event began at t = 0 + -0.407E+02 +/- 0.231E+01 [minutes]
In more convenient units:
Event began at DOY 102 7:21 +/- 0.231E+01 [minutes]

Origin defined at DOY102 8: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 282. +/- 37. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) =$ 0.199E+01 +/-   0.202E+00 [solar radii]
$c(2) =$ 0.243E-01 +/-   0.320E-02 [radii/min]
$c(2) =$ 0.282E+03 +/-   0.371E+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 $c(1)=$ 0.31444E+00 [radii] see Bevington pg. 114
error in $c(2)=$ 0.47792E-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) = 280. +/-   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 8:58 = 0.000E+00 km/sec
The TOTAL velocity at 8:58 = 282. km/sec

The TANGENTIAL velocity at 9: 1 = 0.000E+00 km/sec
The TOTAL velocity at 9: 1 = 282. km/sec

The TANGENTIAL velocity at 9: 9 = 0.000E+00 km/sec
The TOTAL velocity at 9: 9 = 282. km/sec

The TANGENTIAL velocity at 9:12 = 0.000E+00 km/sec
The TOTAL velocity at 9:12 = 282. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.17
Standard Deviation in start time measurement =   0.578E+01
Error in time =   0.32218E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.110E-02
Reduced Chi Squared = 0.101E-01
Chi Squared = 0.201E-01
The probability for exceeding chi square = 0.999E+00

The correlation coefficient =   0.965E+00
The probability that no LINEAR correlation exists between the variables =   0.3515E-01
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
1980 102  8:58:10  3.40 +/- 0.15  280.0 +/- 1.0    SMM
1980 102  9: 1:59  3.50 +/- 0.15  280.0 +/- 1.0    SMM
1980 102  9: 9: 6  3.60 +/- 0.25  280.0 +/- 1.0    SMM
1980 102  9:12:54  3.80 +/- 0.25  280.0 +/- 1.0    SMM


*****************************************
 Structure being measured:
Top of Bright Feature
*****************************************


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


START TIME:


tstart=DOY102  8:43 from derivative = 0
Event begins at   3.29 Solar Radii
 Origin defined at DOY102  8: 0


RADIAL INFORMATION:


RADIAL ACCELERATION =  0.221E+00 +/-  0.350E+00 km/sec**2


The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =    0.439E+01 +/-   0.382E+01 [solar radii]
c(2) =   -0.501E-01 +/-   0.118E+00 [radii/min]
c(2) =   -0.581E+03 +/-   0.137E+04 [km/sec]
c(3) =    0.570E-03 +/-   0.904E-03 [radii/min**2]
c(3) =    0.221E+00 +/-   0.350E+00 [km/sec**2]


The computed ERRORS in coefficients [BEVINGTON] are:


      Approximate error in c(1) =  0.66951E+01 [radii] Bevington pg 154 (8-30)
          Exact error in c(1) =  0.21816E+01 [radii] Bevington pg 154 (8-28)
      Approximate error in c(2) =  0.20569E+00 [radii/min] Bevington pg 154 (8-30)
          Exact error in c(2) =  0.67667E-01 [radii/min] Bevington pg 154 (8-28)
      Approximate error in c(3) =  0.15687E-02 [radii/min**]  Bevington pg 154 (8-30)
          Exact error in c(3) =  0.51983E-03 [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) = 280. +/- 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 8:58 = 0.000E+00 km/sec
The TOTAL velocity at 8:58 = 189. km/sec

The TANGENTIAL velocity at 9: 1 = 0.000E+00 km/sec
The TOTAL velocity at 9: 1 = 239. km/sec

The TANGENTIAL velocity at 9: 9 = 0.000E+00 km/sec
The TOTAL velocity at 9: 9 = 333. km/sec

The TANGENTIAL velocity at 9:12 = 0.000E+00 km/sec
The TOTAL velocity at 9:12 = 384. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.17
Standard Deviation in start time measurement = 0.578E+01
Value of reduced Chi Squared returned from nllst2 = 0.137E-02
Reduced Chi Squared = 0.131E-01
Chi Squared = 0.131E-01
The probability for exceeding chi square = 0.970E+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 = 0.9792E+00
The correlation between the data and the time**2 term = 0.9768E+00
The correlation between the data and the complete equation of motion = 0.9793E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]