SMM C/P 1980 DOY 97   60 +/- 0 degrees

height = h + velocity*time   # data points =   5

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

23:00   23:30   0:00   0:30   1:00
DOY 97   DOY 98   DOY 98
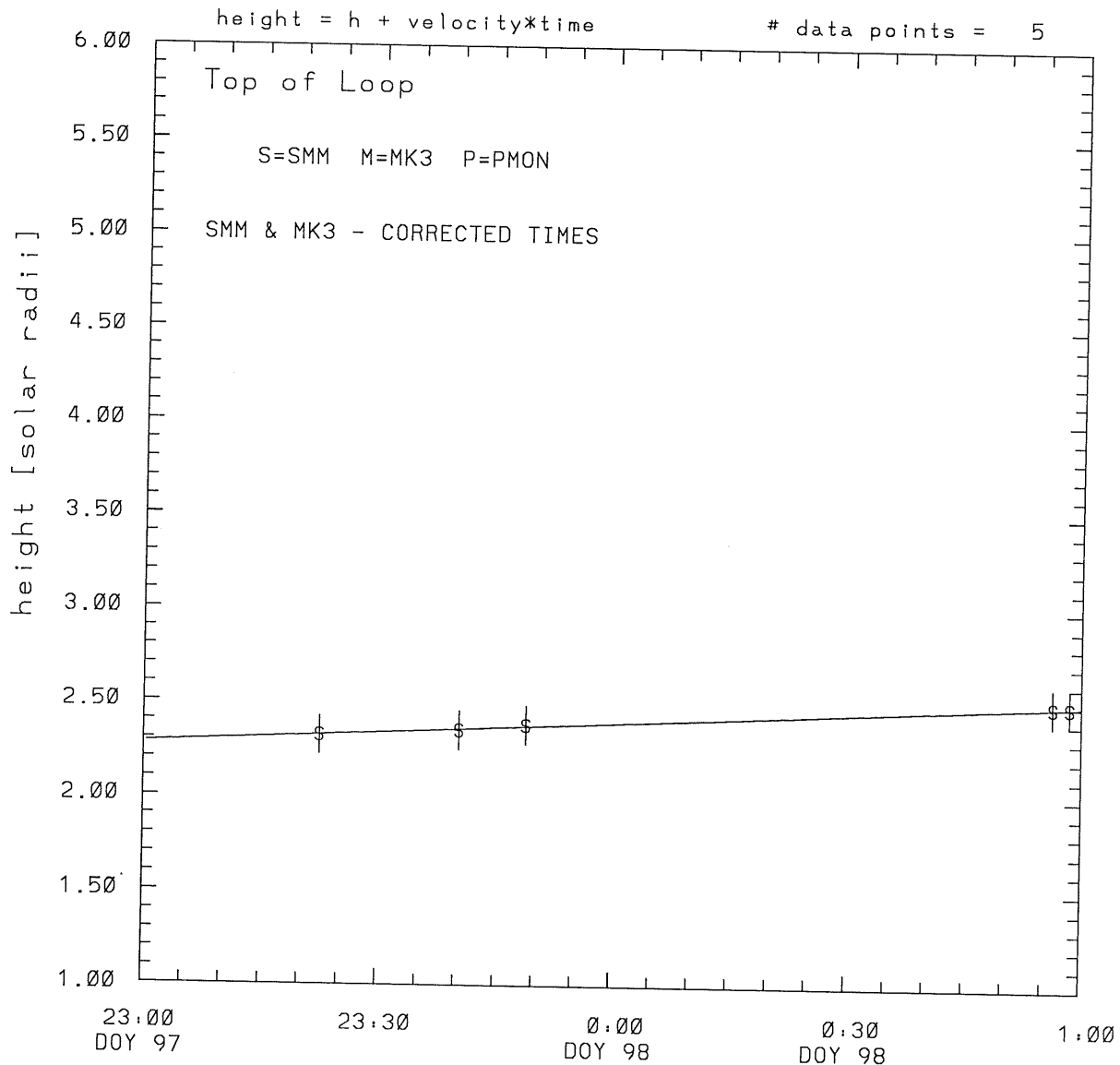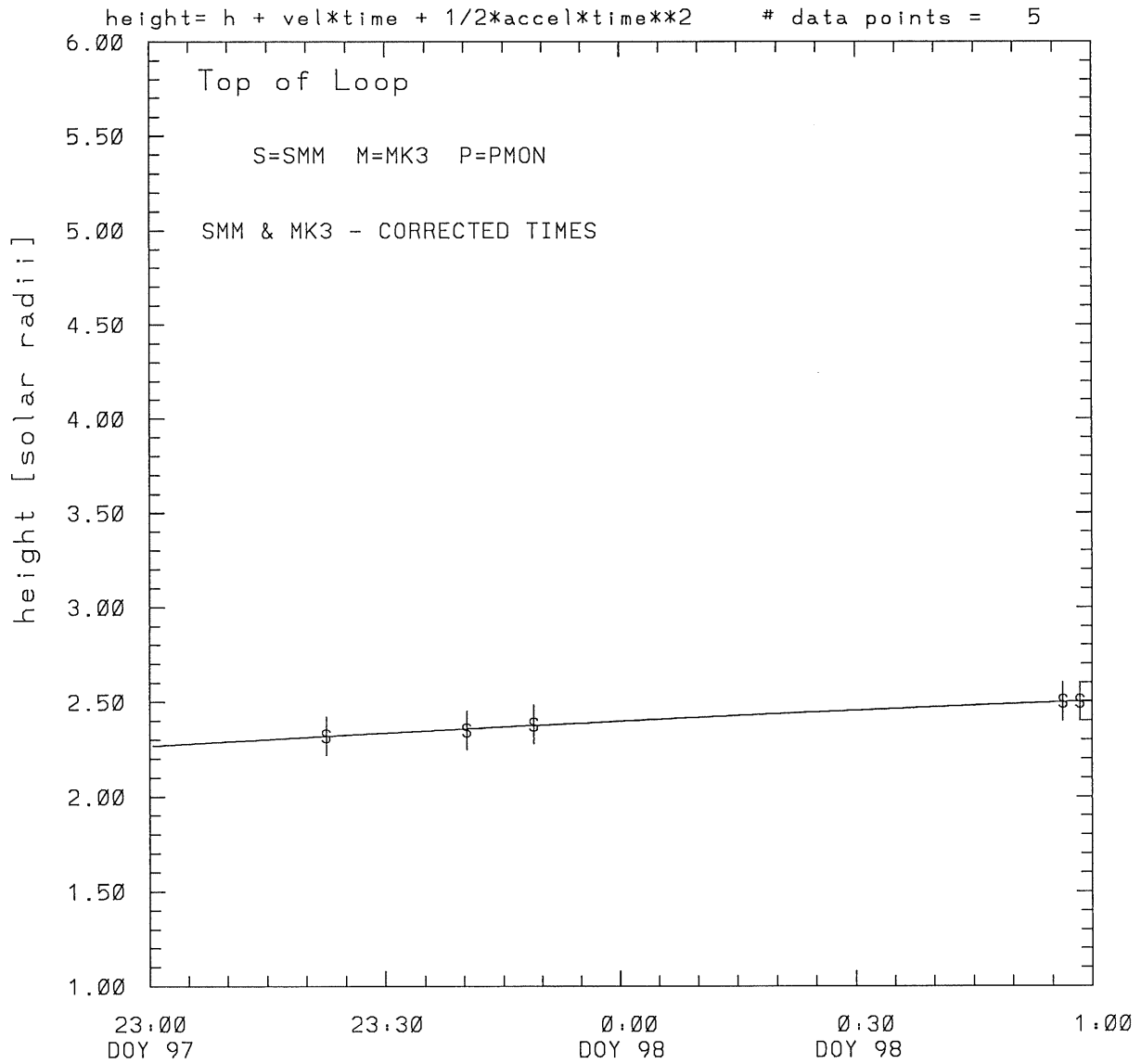
tstart=DOY 97 11:43 +/-   4.6 [min.]
radial velocity=   22. +/-   1. [km/sec]

SMM C/P 1980 DOY 97 60 +/- 0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points = 5

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

23:00   23:30   0:00   0:30   1:00
DOY 97   DOY 98   DOY 98

tstart=DOY 97 17: 8 +/-   190.8 [min.]

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

SMM C/P 1980 DOY 97   60 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   5

Top of Loop

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

28.
27.
26.
25.
24.
23.
22.
21.
20.
19.
18.
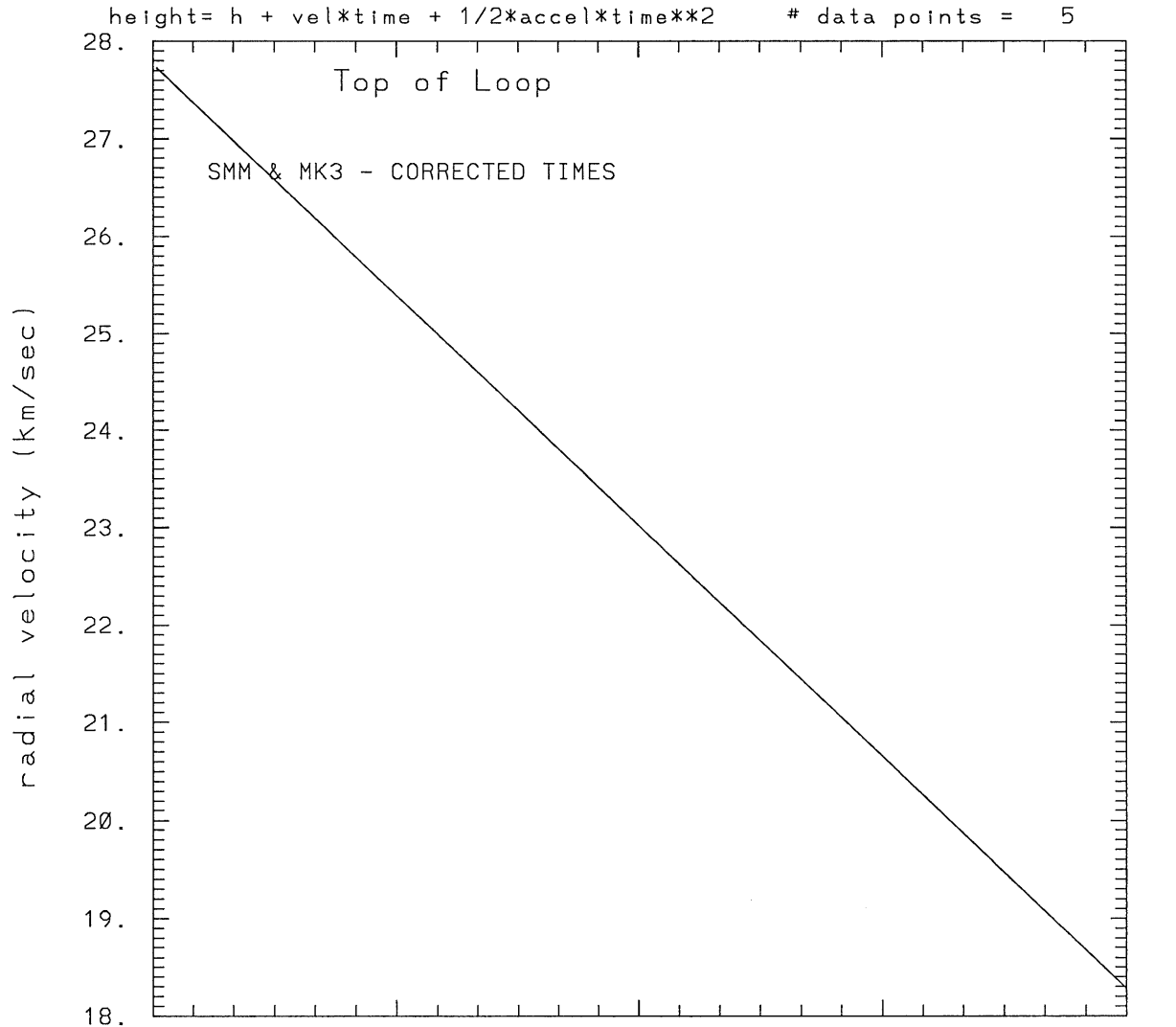
23:00   23:30   0:00   0:30   1:00
DOY 97   DOY 98

tstart=DOY 97 17: 8 +/-   190.8 [min.]

radial acceleration=-.132E-02 km/sec**2

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


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


                        error in        error in
year doy    time    radii  radius    angle  angle    datatype
1980  97  23:22:30   2.32 +/- 0.10    60.0 +/-  0.5      SMM
1980  97  23:40:21   2.35 +/- 0.10    60.0 +/-  0.5      SMM
1980  97  23:48:56   2.38 +/- 0.10    60.0 +/-  0.5      SMM
1980  98   0:56:21   2.50 +/- 0.10    60.0 +/-  0.5      SMM
1980  98   0:58:30   2.50 +/- 0.10    60.0 +/-  0.5      SMM


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


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


START TIME:


Event began at t = 0 + -0.679E+03 +/-  0.463E+01 [minutes]
In more convenient units:
Event began at DOY  97 11:43 +/-  0.463E+01 [minutes]


Origin defined at DOY 97 23: 0

RADIAL INFORMATION:

RADIAL VELOCITY =    22. +/-     1. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =    0.228E+01 +/-    0.472E-02 [solar radii]
c(2) =    0.188E-02 +/-    0.590E-04 [radii/min]
c(2) =    0.219E+02 +/-    0.684E+00 [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)= 0.54550E-02 [radii] see Bevington pg. 114
          error in c(2)= 0.68072E-04 [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) = 60. +/-   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 23:22 = 0.000E+00 km/sec
The TOTAL velocity at 23:22 =   22. km/sec

The TANGENTIAL velocity at 23:40 = 0.000E+00 km/sec
The TOTAL velocity at 23:40 =   22. km/sec

The TANGENTIAL velocity at 23:48 = 0.000E+00 km/sec
The TOTAL velocity at 23:48 =   22. km/sec

The TANGENTIAL velocity at 0:56 = 0.000E+00 km/sec
The TOTAL velocity at 0:56 =   22. km/sec

The TANGENTIAL velocity at 0:58 = 0.000E+00 km/sec
The TOTAL velocity at 0:58 =   22. km/sec

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

 Fit is ok [ier=1]

 Standard Deviation in the height = 0.08
 Standard Deviation in start time measurement =   0.402E+02
 Error in time =   0.56228E+01 using best fit method
 See Taylor Error Analysis [Univ of Colorado] pg.78

 Value of reduced Chi Squared returned from nllst2 = 0.281E-04
 Reduced Chi Squared = 0.106E-03
 Chi Squared = 0.318E-03
 The probability for exceeding chi square = 0.100E+01

 The correlation coefficient =   0.998E+00
 The probability that no LINEAR correlation exists between the variables =   0.1029E-03
 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  97  23:22:30  2.32 +/- 0.10   60.0 +/- 0.5     SMM
 1980  97  23:40:21  2.35 +/- 0.10   60.0 +/- 0.5     SMM
 1980  97  23:48:56  2.38 +/- 0.10   60.0 +/- 0.5     SMM
 1980  98   0:56:21  2.50 +/- 0.10   60.0 +/- 0.5     SMM
 1980  98   0:58:30  2.50 +/- 0.10   60.0 +/- 0.5     SMM


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


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


START TIME:


Event began at t = 0 + -0.352E+03 +/-  0.191E+03 [minutes]
In more convenient units:
Event began at DOY  97 17: 8 +/-  0.191E+03 [minutes]


Origin defined at DOY 97 23: 0


RADIAL INFORMATION:


RADIAL ACCELERATION = -0.132E-02 +/-  0.131E-02 km/sec**2


The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =   0.227E+01 +/-   0.142E-01 [solar radii]
c(2) =   0.239E-02 +/-   0.512E-03 [radii/min]
c(2) =   0.278E+02 +/-   0.593E+01 [km/sec]
c(3) =  -0.340E-05 +/-   0.340E-05 [radii/min**2]
c(3) =  -0.132E-02 +/-   0.131E-02 [km/sec**2]


The computed ERRORS in coefficients [BEVINGTON] are:


    Approximate error in c(1) =  0.17397E-01 [radii] Bevington pg 154 (8-30)
        Exact error in c(1) =  0.55501E-02 [radii] Bevington pg 154 (8-28)
    Approximate error in c(2) =  0.62649E-03 [radii/min] Bevington pg 154 (8-30)
        Exact error in c(2) =  0.25746E-03 [radii/min] Bevington pg 154 (8-28)
    Approximate error in c(3) =  0.41634E-05 [radii/min**] Bevington pg 154 (8-30)
        Exact error in c(3) =  0.18074E-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) = 60. +/- 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 23:22 = 0.000E+00 km/sec
The TOTAL velocity at 23:22 = 26. km/sec

The TANGENTIAL velocity at 23:40 = 0.000E+00 km/sec
The TOTAL velocity at 23:40 = 25. km/sec

The TANGENTIAL velocity at 23:48 = 0.000E+00 km/sec
The TOTAL velocity at 23:48 = 24. km/sec

The TANGENTIAL velocity at 0:56 = 0.000E+00 km/sec
The TOTAL velocity at 0:56 = 19. km/sec

The TANGENTIAL velocity at 0:58 = 0.000E+00 km/sec
The TOTAL velocity at 0:58 = 18. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.08
Standard Deviation in start time measurement = 0.402E+02
Value of reduced Chi Squared returned from nllst2 = 0.281E-04
Reduced Chi Squared = 0.103E-03
Chi Squared = 0.205E-03
The probability for exceeding chi square = 0.100E+01

For a second order fit 3 correlation coefficients are given:
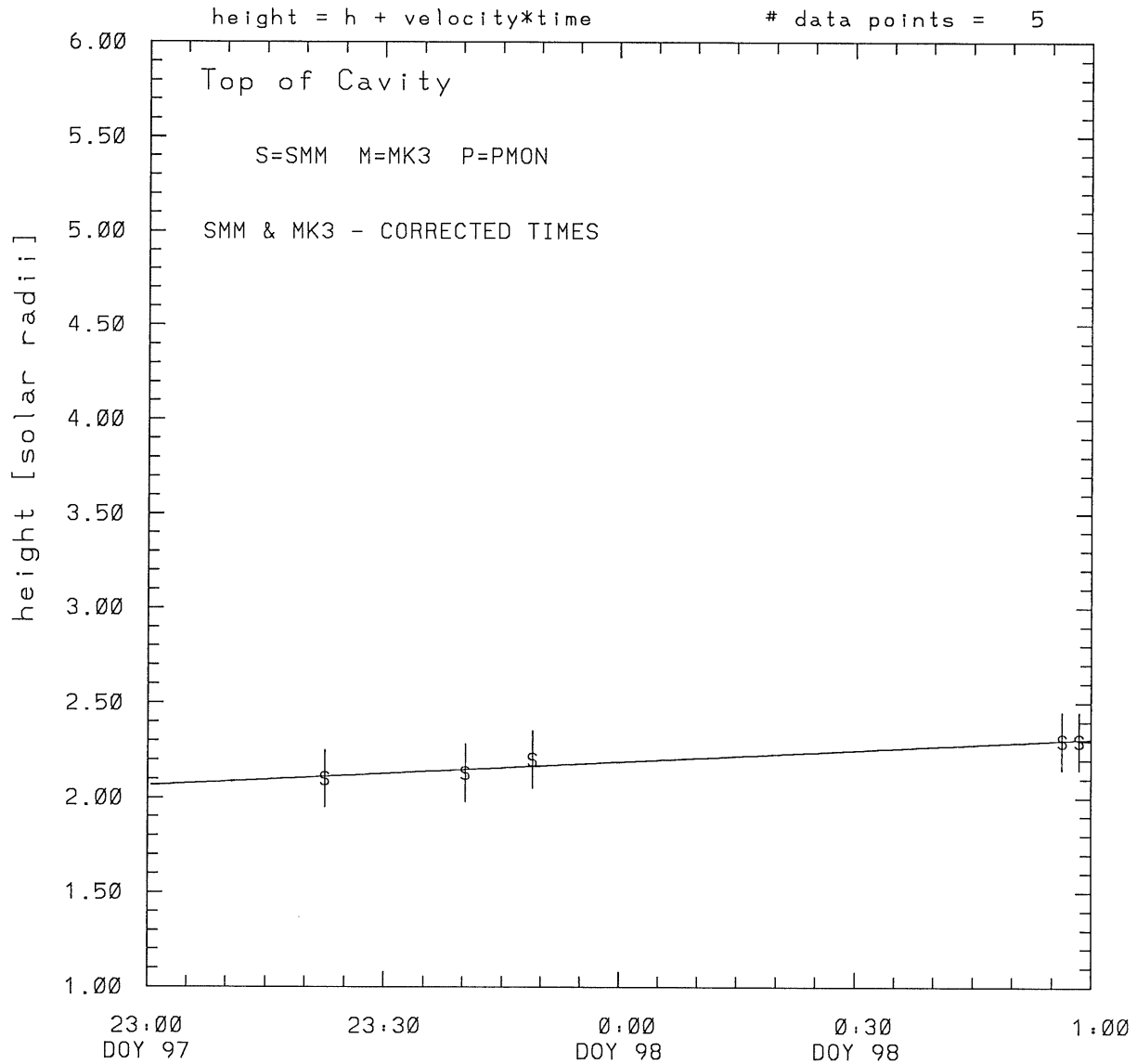 (Using equation of motion: r = a + bt + at**2)
The correlation between the data and the term linear in time = 0.9980E+00
The correlation between the data and the time**2 term = 0.9878E+00
The correlation between the data and the complete equation of motion = 0.9971E+00
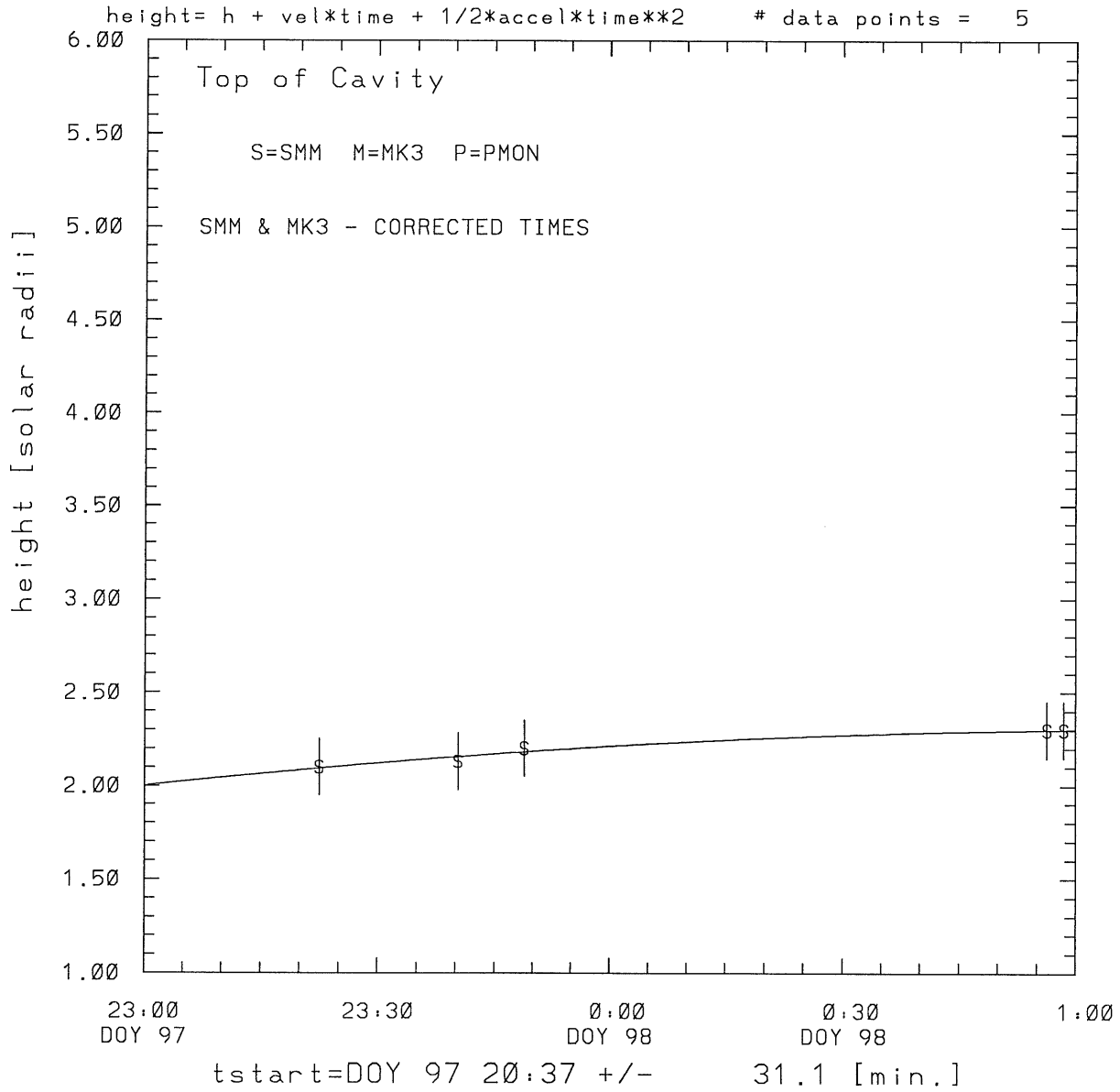SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

SMM C/P 1980 DOY 97   60 +/- 0 degrees

height = h + velocity*time   # data points =   5

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

23:00   23:30   0:00   0:30   1:00
DOY 97   DOY 98   DOY 98

tstart=DOY 97 14:13 +/-   15.9 [min.]
radial velocity=   23. +/-   3. [km/sec]

SMM C/P 1980 DOY 97   60 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   5

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

23:00   23:30   0:00   0:30   1:00
DOY 97   DOY 98   DOY 98

tstart=DOY 97 20:37 +/-   31.1 [min.]

radial acceleration=-0.0064 +/- 0.0046 [km/sec**2]

SMM C/P 1980 DOY 97   60 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   5

radial velocity (km/sec)

54.
52.
50.
48.
46.
44.
41.
39.
37.
35.
33.
31.
29.
27.
25.
23.
21.
19.
16.
14.
12.
10.
8.
6.

Top of Cavity

SMM & MK3 - CORRECTED TIMES

23:00   23:30   0:00   0:30   1:00
DOY 97   DOY 98
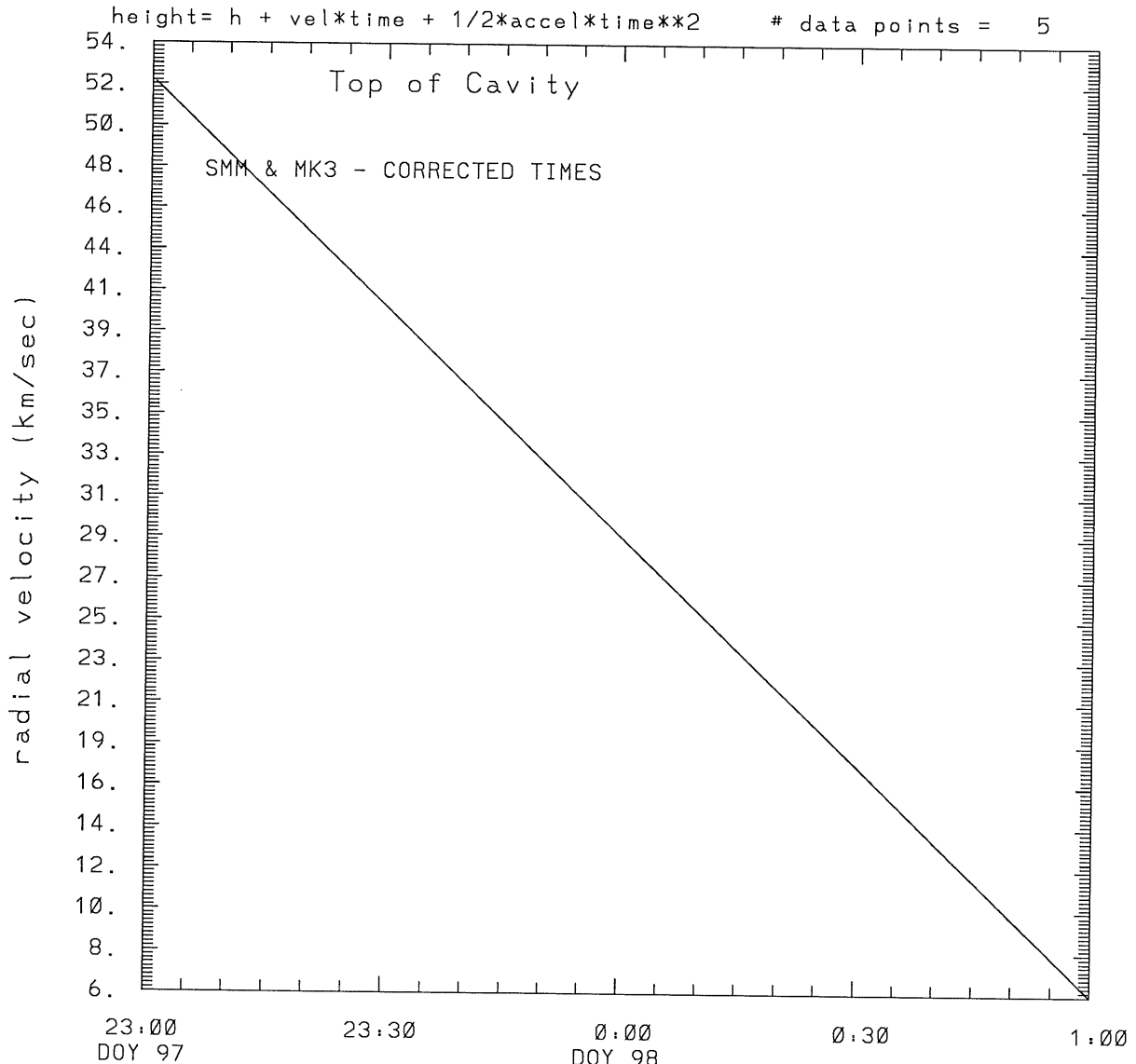
tstart=DOY 97 20:37 +/-   31.1 [min.]

radial acceleration=-.641E-02 km/sec**2

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


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


                        error in        error in
 year doy   time    radii radius    angle  angle   datatype
 1980  97  23:22:30  2.10 +/- 0.15   60.0 +/-  0.5    SMM
 1980  97  23:40:21  2.13 +/- 0.15   60.0 +/-  0.5    SMM
 1980  97  23:48:56  2.20 +/- 0.15   60.0 +/-  0.5    SMM
 1980  98   0:56:21  2.30 +/- 0.15   60.0 +/-  0.5    SMM
 1980  98   0:58:30  2.30 +/- 0.15   60.0 +/-  0.5    SMM


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


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


START TIME:


 Event began at t = 0 + -0.527E+03 +/-  0.159E+02 [minutes]
 In more convenient units:
 Event began at DOY  97 14:13 +/-  0.159E+02 [minutes]

 Origin defined at DOY 97 23: 0

RADIAL INFORMATION:

RADIAL VELOCITY =    23. +/-    3. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =   0.207E+01 +/-   0.184E-01 [solar radii]
 c(2) =   0.202E-02 +/-   0.230E-03 [radii/min]
 c(2) =   0.235E+02 +/-   0.266E+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)= 0.21246E-01 [radii] see Bevington pg. 114
            error in c(2)= 0.26512E-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) = 60. +/- 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 23:22 = 0.000E+00 km/sec
The TOTAL velocity at 23:22 =   23. km/sec

The TANGENTIAL velocity at 23:40 = 0.000E+00 km/sec
The TOTAL velocity at 23:40 =   23. km/sec

The TANGENTIAL velocity at 23:48 = 0.000E+00 km/sec
The TOTAL velocity at 23:48 =   23. km/sec

The TANGENTIAL velocity at 0:56 = 0.000E+00 km/sec
The TOTAL velocity at 0:56 =   23. km/sec

The TANGENTIAL velocity at 0:58 = 0.000E+00 km/sec
The TOTAL velocity at 0:58 =   23. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.09
Standard Deviation in start time measurement =   0.402E+02
Error in time =   0.20413E+02 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.426E-03
Reduced Chi Squared = 0.154E-02
Chi Squared = 0.461E-02
The probability for exceeding chi square = 0.100E+01

The correlation coefficient =   0.975E+00
The probability that no LINEAR correlation exists between the variables =   0.4676E-02
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  97  23:22:30  2.10 +/- 0.15    60.0 +/-  0.5      SMM
 1980  97  23:40:21  2.13 +/- 0.15    60.0 +/-  0.5      SMM
 1980  97  23:48:56  2.20 +/- 0.15    60.0 +/-  0.5      SMM
 1980  98   0:56:21  2.30 +/- 0.15    60.0 +/-  0.5      SMM
 1980  98   0:58:30  2.30 +/- 0.15    60.0 +/-  0.5      SMM


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


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


START TIME:


Event began at t = 0 + -0.145E+03 +/- 0.311E+02 [minutes]
In more convenient units:
Event began at DOY 97 20:37 +/- 0.311E+02 [minutes]


Origin defined at DOY 97 23: 0


RADIAL INFORMATION:


RADIAL ACCELERATION = -0.641E-02 +/- 0.461E-02 km/sec**2


The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =    0.200E+01 +/-   0.498E-01 [solar radii]
c(2) =    0.450E-02 +/-   0.179E-02 [radii/min]
c(2) =    0.522E+02 +/-   0.208E+02 [km/sec]
c(3) =   -0.166E-04 +/-   0.119E-04 [radii/min**2]
c(3) =   -0.641E-02 +/-   0.461E-02 [km/sec**2]


The computed ERRORS in coefficients [BEVINGTON] are:


      Approximate error in c(1) =  0.61013E-01 [radii] Bevington pg 154 (8-30)
          Exact error in c(1) =  0.11209E-01 [radii] Bevington pg 154 (8-28)
      Approximate error in c(2) =  0.21972E-02 [radii/min] Bevington pg 154 (8-30)
          Exact error in c(2) =  0.45339E-03 [radii/min] Bevington pg 154 (8-28)
      Approximate error in c(3) =  0.14602E-04 [radii/min**]  Bevington pg 154 (8-30)
          Exact error in c(3) =  0.31468E-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) = 60. +/- 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 23:22 = 0.000E+00 km/sec
The TOTAL velocity at 23:22 = 44. km/sec

The TANGENTIAL velocity at 23:40 = 0.000E+00 km/sec
The TOTAL velocity at 23:40 = 37. km/sec

The TANGENTIAL velocity at 23:48 = 0.000E+00 km/sec
The TOTAL velocity at 23:48 = 33. km/sec

The TANGENTIAL velocity at 0:56 = 0.000E+00 km/sec
The TOTAL velocity at 0:56 =   7. km/sec

The TANGENTIAL velocity at 0:58 = 0.000E+00 km/sec
The TOTAL velocity at 0:58 =   7. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.09
Standard Deviation in start time measurement =   0.402E+02
Value of reduced Chi Squared returned from nllst2 = 0.345E-03
Reduced Chi Squared = 0.119E-02
Chi Squared = 0.239E-02
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 = 0.9752E+00
The correlation between the data and the time**2 term = 0.9527E+00
The correlation between the data and the complete equation of motion = 0.9702E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]