SMM C/P 1987 DOY146 110 +/- 0 degrees

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

Top of Outer 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
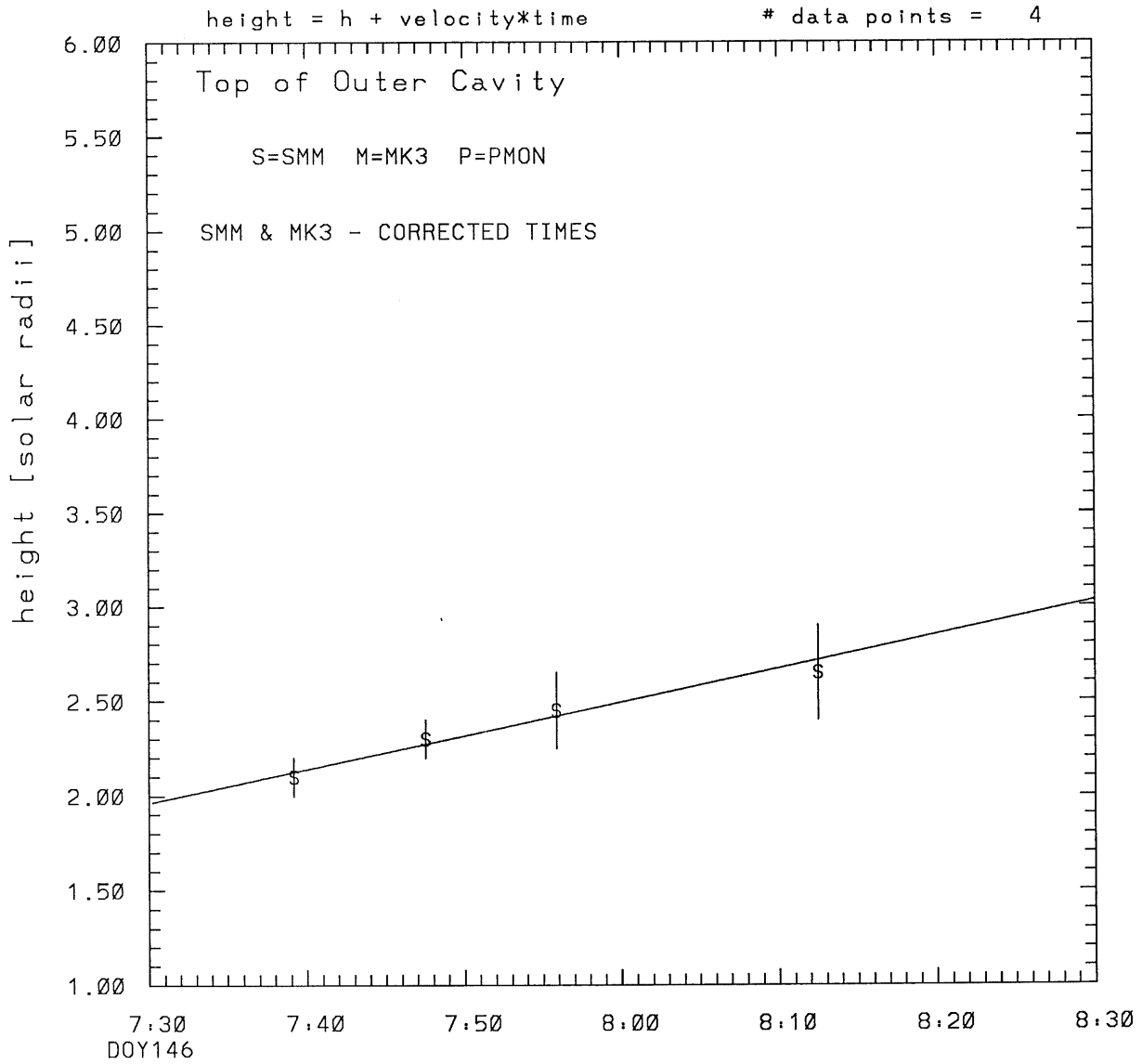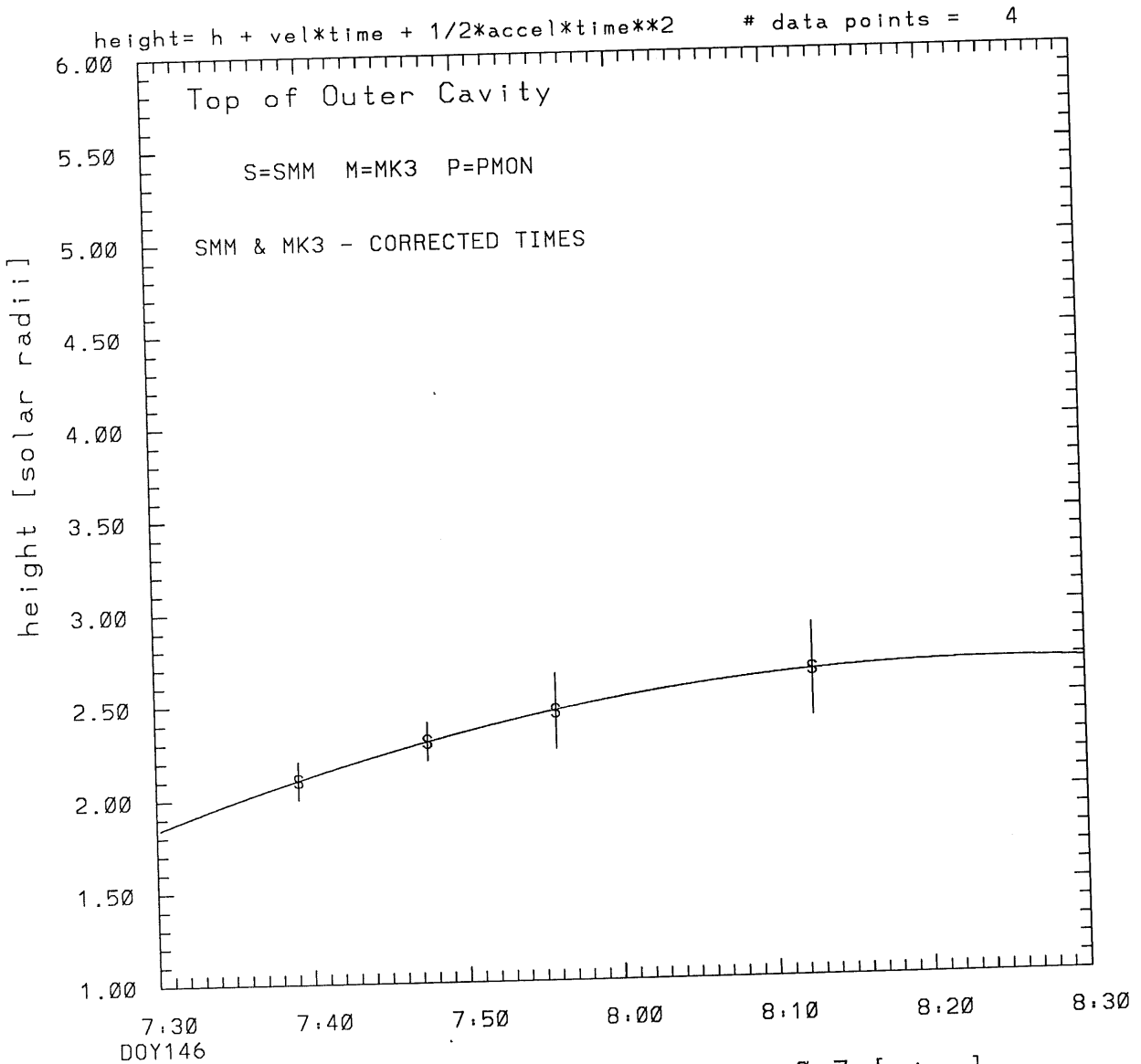1.50
1.00

7:30   7:40   7:50   8:00   8:10   8:20   8:30
DOY146

tstart=DOY146 6:36 +/-   3.7 [min.]
radial velocity= 206. +/- 23. [km/sec]

SMM C/P 1987 DOY146 110 +/- 0 degrees

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

Top of Outer 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

7:30   7:40   7:50   8:00   8:10   8:20   8:30
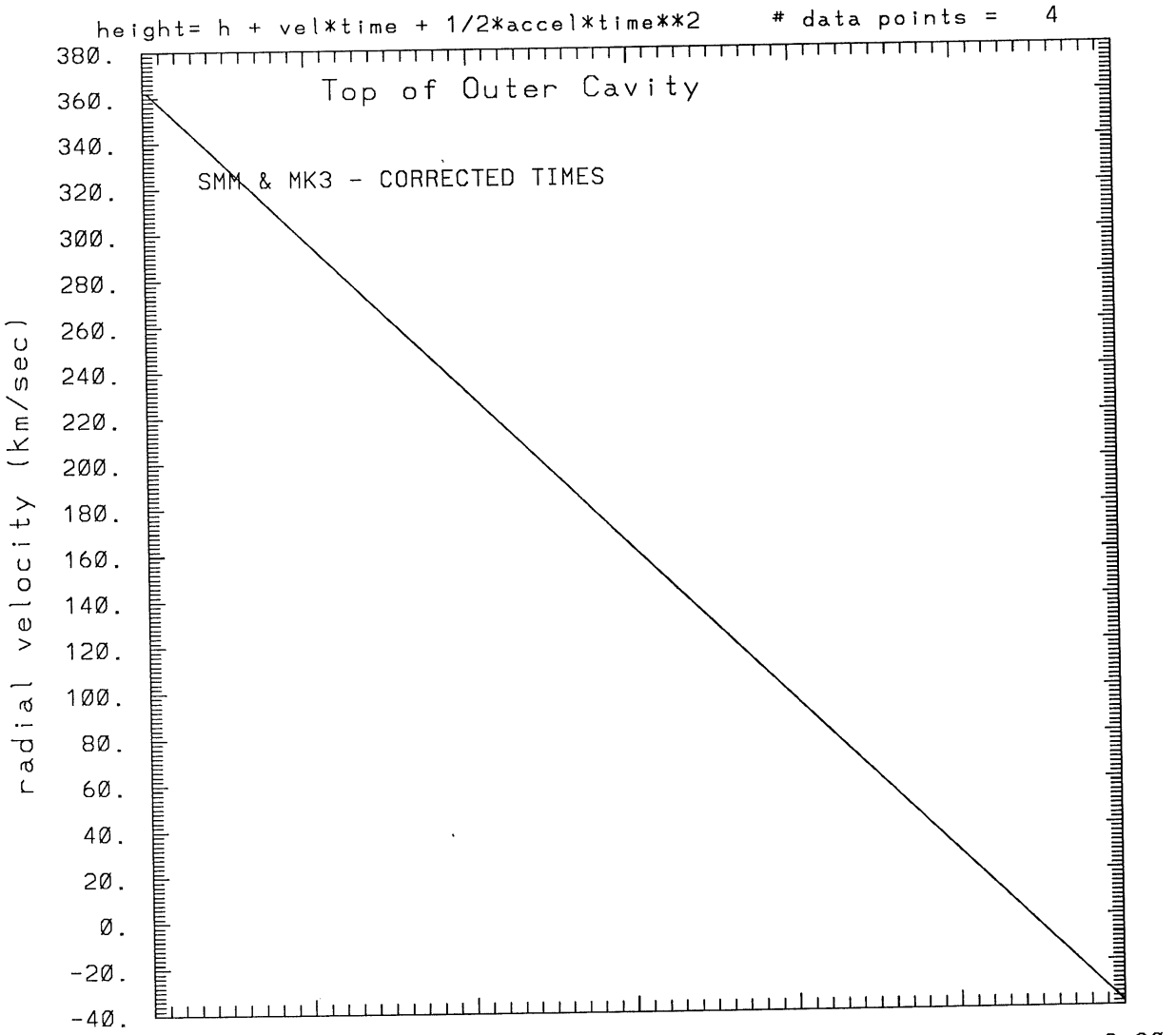DOY146

tstart=DOY146 7: 8 +/-   0.7 [min.]

radial acceleration=-0.1116 +/- 0.0056 [km/sec**2]

SMM C/P 1987 DOY146 110 +/- 0 degrees

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

Top of Outer Cavity

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

380.
360.
340.
320.
300.
280.
260.
240.
220.
200.
180.
160.
140.
120.
100.
80.
60.
40.
20.
0.
-20.
-40.

7:30   7:40   7:50   8:00   8:10   8:20   8:30
DOY146

tstart=DOY146 7: 8 +/-   0.7 [min.]

radial acceleration=-.112E+00 km/sec**2

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


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

year doy	time	radii	error in radius	angle	error in angle	datatype
1987 146	7:39:10	2.10 +/-	0.10	110.0 +/-	0.5	SMM
1987 146	7:47:31	2.30 +/-	0.10	110.0 +/-	0.5	SMM
1987 146	7:55:52	2.45 +/-	0.20	110.0 +/-	0.5	SMM
1987 146	8:12:29	2.65 +/-	0.25	110.0 +/-	0.5	SMM

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


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


START TIME:


Event began at t = 0 + -0.541E+02 +/-  0.374E+01 [minutes]
In more convenient units:
Event began at DOY 146  6:36 +/-  0.374E+01 [minutes]


Origin defined at DOY146  7:30


RADIAL INFORMATION:


RADIAL VELOCITY =   206. +/-    23. km/sec


The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =    0.196E+01 +/-   0.378E-01 [solar radii]
c(2) =    0.178E-01 +/-   0.201E-02 [radii/min]
c(2) =    0.206E+03 +/-   0.234E+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)= 0.62108E-01 [radii] see Bevington pg. 114
         error in c(2)= 0.23208E-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) = 110. +/-   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 7:39 = 0.000E+00 km/sec
The TOTAL velocity at 7:39 = 206. km/sec

The TANGENTIAL velocity at 7:47 = 0.000E+00 km/sec
The TOTAL velocity at 7:47 = 206. km/sec

The TANGENTIAL velocity at 7:55 = 0.000E+00 km/sec
The TOTAL velocity at 7:55 = 206. km/sec

The TANGENTIAL velocity at 8:12 = 0.000E+00 km/sec
The TOTAL velocity at 8:12 = 206. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.23
Standard Deviation in start time measurement =   0.123E+02
Error in time =   0.45531E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.124E-02
Reduced Chi Squared = 0.110E-01
Chi Squared = 0.220E-01
The probability for exceeding chi square = 0.999E+00

The correlation coefficient =   0.986E+00
The probability that no LINEAR correlation exists between the variables =   0.1439E-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
1987 146  7:39:10  2.10 +/- 0.10   110.0 +/-  0.5    SMM
1987 146  7:47:31  2.30 +/- 0.10   110.0 +/-  0.5    SMM
1987 146  7:55:52  2.45 +/- 0.20   110.0 +/-  0.5    SMM
1987 146  8:12:29  2.65 +/- 0.25   110.0 +/-  0.5    SMM


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


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


START TIME:


Event began at t = 0 + -0.222E+02 +/-  0.720E+00 [minutes]
In more convenient units:
Event began at DOY 146  7: 8 +/-  0.720E+00 [minutes]


Origin defined at DOY146  7:30


RADIAL INFORMATION:


RADIAL ACCELERATION = -0.112E+00 +/-  0.565E-02 km/sec**2


The computed RADIAL coefficients and errors FROM NLLST2 are:


c(1) =    0.184E+01 +/-   0.708E-02 [solar radii]
c(2) =    0.314E-01 +/-   0.710E-03 [radii/min]
c(2) =    0.364E+03 +/-   0.824E+01 [km/sec]
c(3) =   -0.289E-03 +/-   0.146E-04 [radii/min**2]
c(3) =   -0.112E+00 +/-   0.565E-02 [km/sec**2]


The computed ERRORS in coefficients [BEVINGTON] are:

        Approximate error in c(1) = 0.14531E-01 [radii] Bevington pg 154 (8-30)
             Exact error in c(1) = 0.35598E-02 [radii] Bevington pg 154 (8-28)
        Approximate error in c(2) = 0.12986E-02 [radii/min] Bevington pg 154 (8-30)
             Exact error in c(2) = 0.43513E-03 [radii/min] Bevington pg 154 (8-28)
        Approximate error in c(3) = 0.24152E-04 [radii/min**] Bevington pg 154 (8-30)
             Exact error in c(3) = 0.84525E-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) = 110. +/- 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 7:39 = 0.000E+00 km/sec
The TOTAL velocity at 7:39 = 302. km/sec

The TANGENTIAL velocity at 7:47 = 0.000E+00 km/sec
The TOTAL velocity at 7:47 = 246. km/sec

The TANGENTIAL velocity at 7:55 = 0.000E+00 km/sec
The TOTAL velocity at 7:55 = 190. km/sec

The TANGENTIAL velocity at 8:12 = 0.000E+00 km/sec
The TOTAL velocity at 8:12 =   79. km/sec

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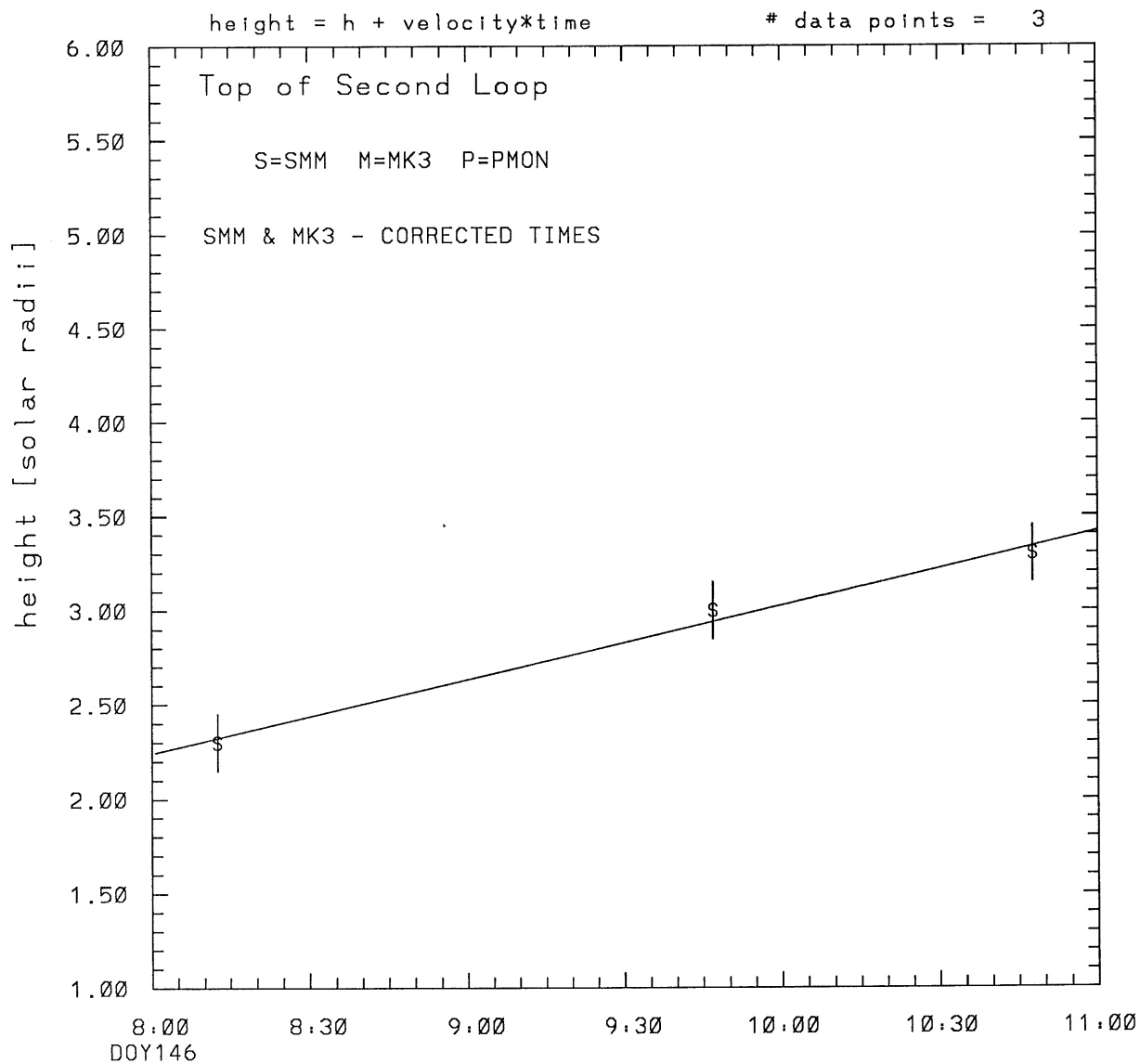

Fit is ok [ier=1]

Standard Deviation in the height = 0.23
Standard Deviation in start time measurement =   0.123E+02
Value of reduced Chi Squared returned from nllst2 = 0.950E-05
Reduced Chi Squared = 0.104E-03
Chi Squared = 0.104E-03
The probability for exceeding chi square = 0.998E+00

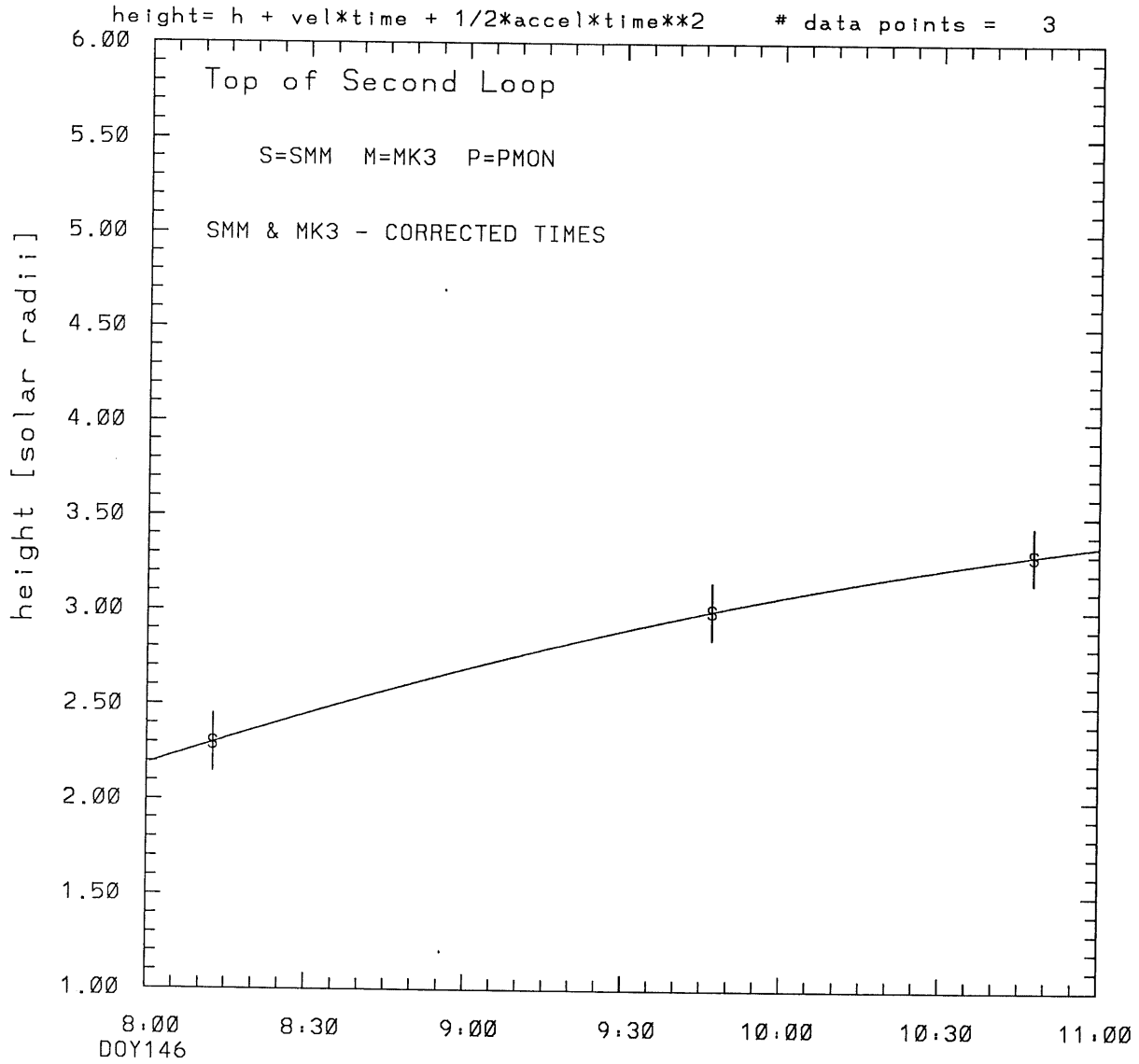For a second order fit 3 correlation coefficients are given:
 (Using equation of motion: r = a + bt + at**2)
The correlation between the data and the term linear in time =   0.9079E+00
The correlation between the data and the time**2 term =   0.7948E+00
0The correlation between the data and the complete equation of motion =   0.1002E+01
 SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

SMM C/P 1987 DOY146 120 +/- 0 degrees

height = h + velocity*time   # data points = 3

Top of Second 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

8:00   8:30   9:00   9:30   10:00 10:30 11:00
DOY146

tstart=DOY146 4:50 +/-   8.2 [min.]
radial velocity=   76. +/-   5. [km/sec]

SMM C/P 1987 DOY146 120 +/- 0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   3

Top of Second 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

8:00 8:30 9:00 9:30 10:00 10:30 11:00
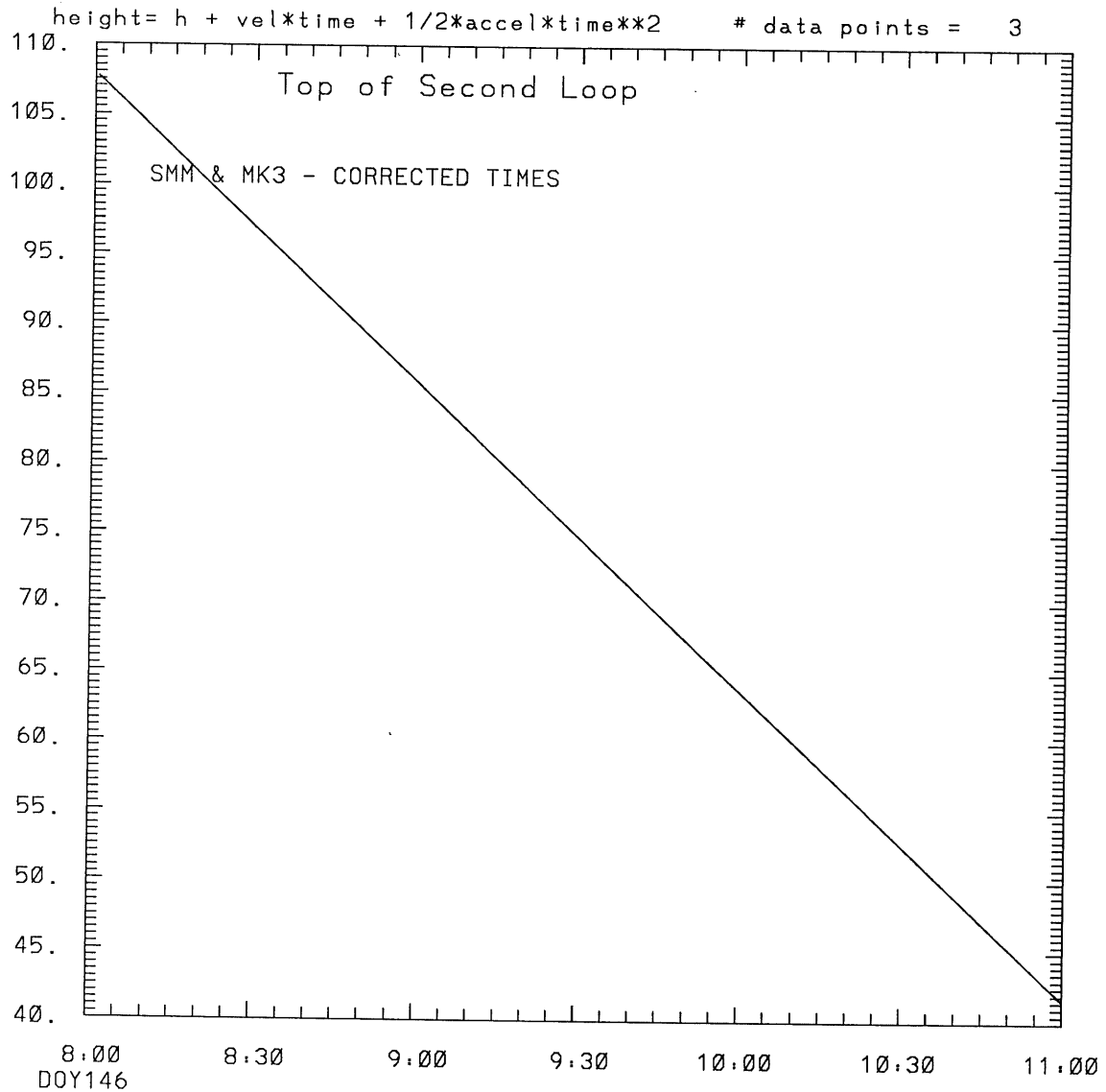DOY146

tstart=DOY146 6:14 +/-   0.0 [min.]

radial acceleration=-0.0061 +/- 0.0000 [km/sec**2]

SMM C/P 1987 DOY146 120 +/- 0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   3

Top of Second Loop

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

110.
105.
100.
95.
90.
85.
80.
75.
70.
65.
60.
55.
50.
45.
40.

8:00   8:30   9:00   9:30   10:00   10:30   11:00
DOY146

tstart=DOY146   6:14 +/-   0.0 [min.]

radial acceleration=-.614E-02 km/sec**2

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


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


                            error in        error in
    year doy    time    radii  radius    angle  angle    datatype
    1987 146   8:12:29   2.30 +/- 0.15   120.0 +/-  0.5     SMM
    1987 146   9:46:58   3.00 +/- 0.15   120.0 +/-  1.0     SMM
    1987 146  10:47:38   3.30 +/- 0.15   120.0 +/-  1.0     SMM


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


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


START TIME:

  Event began at t = 0 + -0.190E+03 +/-  0.822E+01 [minutes]
  In more convenient units:
  Event began at DOY 146  4:50 +/-  0.822E+01 [minutes]

  Origin defined at DOY146  8: 0

RADIAL INFORMATION:

RADIAL VELOCITY =    76. +/-     5. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

  c(1) =    0.224E+01 +/-   0.542E-01 [solar radii]
  c(2) =    0.653E-02 +/-   0.472E-03 [radii/min]
  c(2) =    0.757E+02 +/-   0.547E+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)= 0.76711E-01 [radii] see Bevington pg. 114
              error in c(2)= 0.66685E-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) = 120. +/-   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 8:12 = 0.000E+00 km/sec
The TOTAL velocity at 8:12 =   76. km/sec

The TANGENTIAL velocity at 9:46 = 0.000E+00 km/sec
The TOTAL velocity at 9:46 =   76. km/sec

The TANGENTIAL velocity at 10:47 = 0.000E+00 km/sec
The TOTAL velocity at 10:47 =   76. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.51
Standard Deviation in start time measurement =   0.638E+02
Error in time =   0.11293E+02 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.272E-02
Reduced Chi Squared = 0.117E-01
Chi Squared = 0.117E-01
The probability for exceeding chi square = 0.958E+00

The correlation coefficient =   0.995E+00
The probability that no LINEAR correlation exists between the variables =   0.6479E-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
1987	146	8:12:29	2.30	+/- 0.15		120.0	+/- 0.5	SMM
1987	146	9:46:58	3.00	+/- 0.15		120.0	+/- 1.0	SMM
1987	146	10:47:38	3.30	+/- 0.15		120.0	+/- 1.0	SMM

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


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

START TIME:

Event began at t = 0 + -0.108E+03 +/- 0.000E+00 [minutes]
In more convenient units:
Event began at DOY 146 6:14 +/- 0.000E+00 [minutes]

Origin defined at DOY146 8: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = -0.614E-02 +/- 0.444E-07 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) =$ 0.219E+01 +/-   0.685E-06 [solar radii]
$c(2) =$ 0.931E-02 +/-   0.206E-07 [radii/min]
$c(2) =$ 0.108E+03 +/-   0.239E-03 [km/sec]
$c(3) =$ -0.159E-04 +/-   0.115E-09 [radii/min**2]
$c(3) =$ -0.614E-02 +/-   0.444E-07 [km/sec**2]

ANGULAR INFORMATION:

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

The computed ANGULAR coefficients and errors FROM NLLST2 are:

$a(1) =$ 120. +/-   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 8:12 = 0.000E+00 km/sec
The TOTAL velocity at 8:12 = 103. km/sec

The TANGENTIAL velocity at 9:46 = 0.000E+00 km/sec
The TOTAL velocity at 9:46 =   69. km/sec

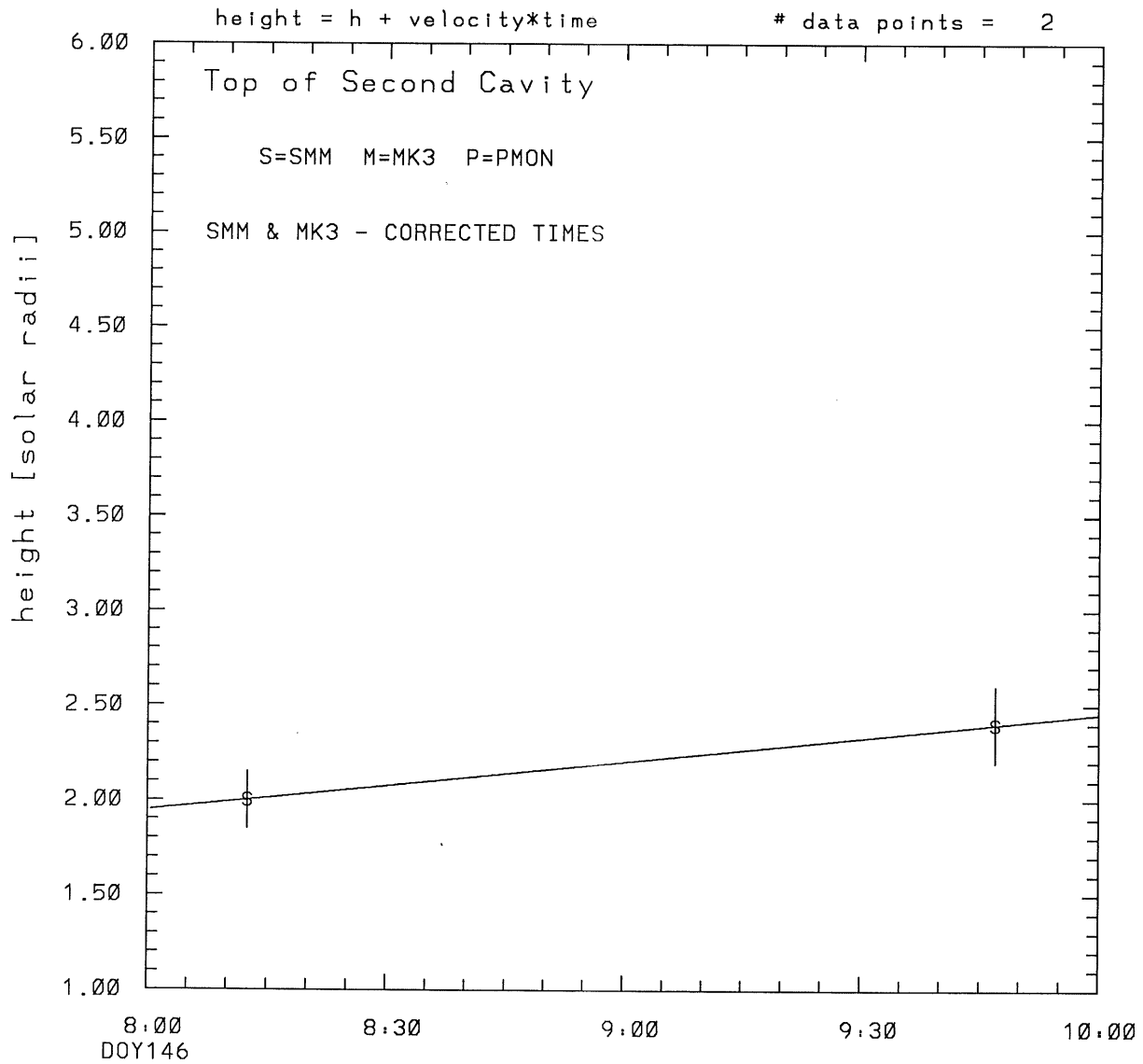The TANGENTIAL velocity at 10:47 = 0.000E+00 km/sec
The TOTAL velocity at 10:47 =   46. km/sec

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

Number data points = number of coefficients. No error analysis is possible.

Correlation coefficient is not computable!

SMM C/P   1987 DOY146   120 +/-   0 degrees

height = h + velocity*time   # data points =   2

Top of Second 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

8:00   8:30   9:00   9:30   10:00
DOY146

tstart=DOY146 4:18 +/-   0.0 [min.]
radial velocity=   49. +/-   0. [km/sec]

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


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


                          error in        error in
year doy   time    radii  radius    angle  angle    datatype
1987 146   8:12:29  2.00 +/- 0.15   120.0 +/-  0.5    SMM
1987 146   9:46:58  2.40 +/- 0.20   120.0 +/-  1.0    SMM


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


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


START TIME:

Event began at t = 0 + -0.224E+03 +/-  0.000E+00 [minutes]
In more convenient units:
Event began at DOY 146  4:18 +/-  0.000E+00 [minutes]


 Origin defined at DOY146  8: 0

RADIAL INFORMATION:

RADIAL VELOCITY =    49. +/-     0. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) =   0.195E+01 +/-   0.483E-06 [solar radii]
c(2) =   0.423E-02 +/-   0.743E-08 [radii/min]
c(2) =   0.491E+02 +/-   0.862E-04 [km/sec]
c(3) =   0.000E+00 +/-   0.000E+00 [radii/min**2]
c(3) =   0.000E+00 +/-   0.000E+00 [km/sec**2]

ANGULAR INFORMATION:

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

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 120. +/-   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 8:12 = 0.000E+00 km/sec
The TOTAL velocity at 8:12 =   49. km/sec

The TANGENTIAL velocity at 9:46 = 0.000E+00 km/sec
The TOTAL velocity at 9:46 =   49. km/sec

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

Number data points = number of coefficients. No error analysis is possible.

Correlation coefficient is not computable!