SMM C/P 1989 DOY265   145 +/-   0 degrees

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

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

17:00   17:30   18:00   18:30   19:00   19:30   20:00
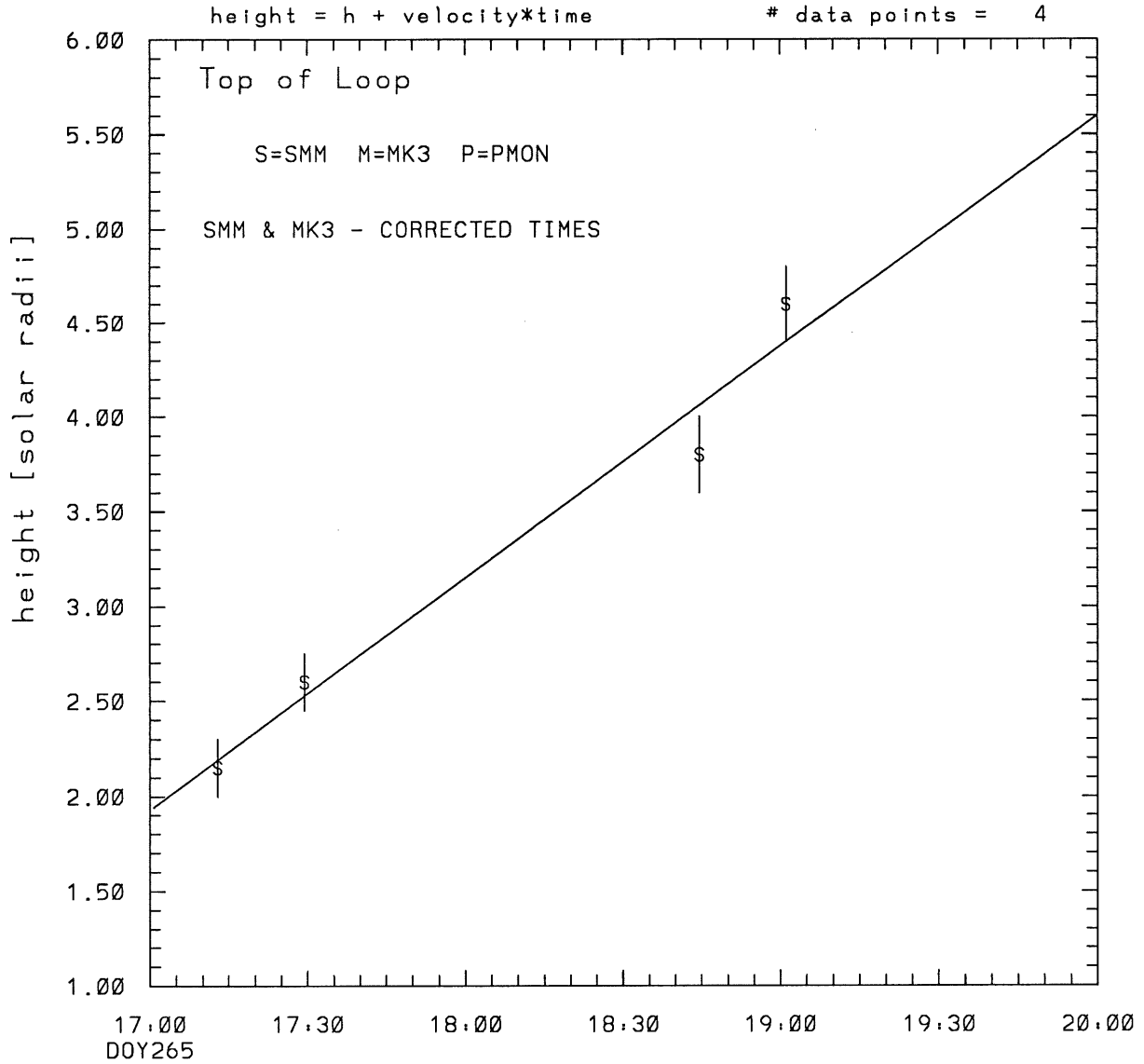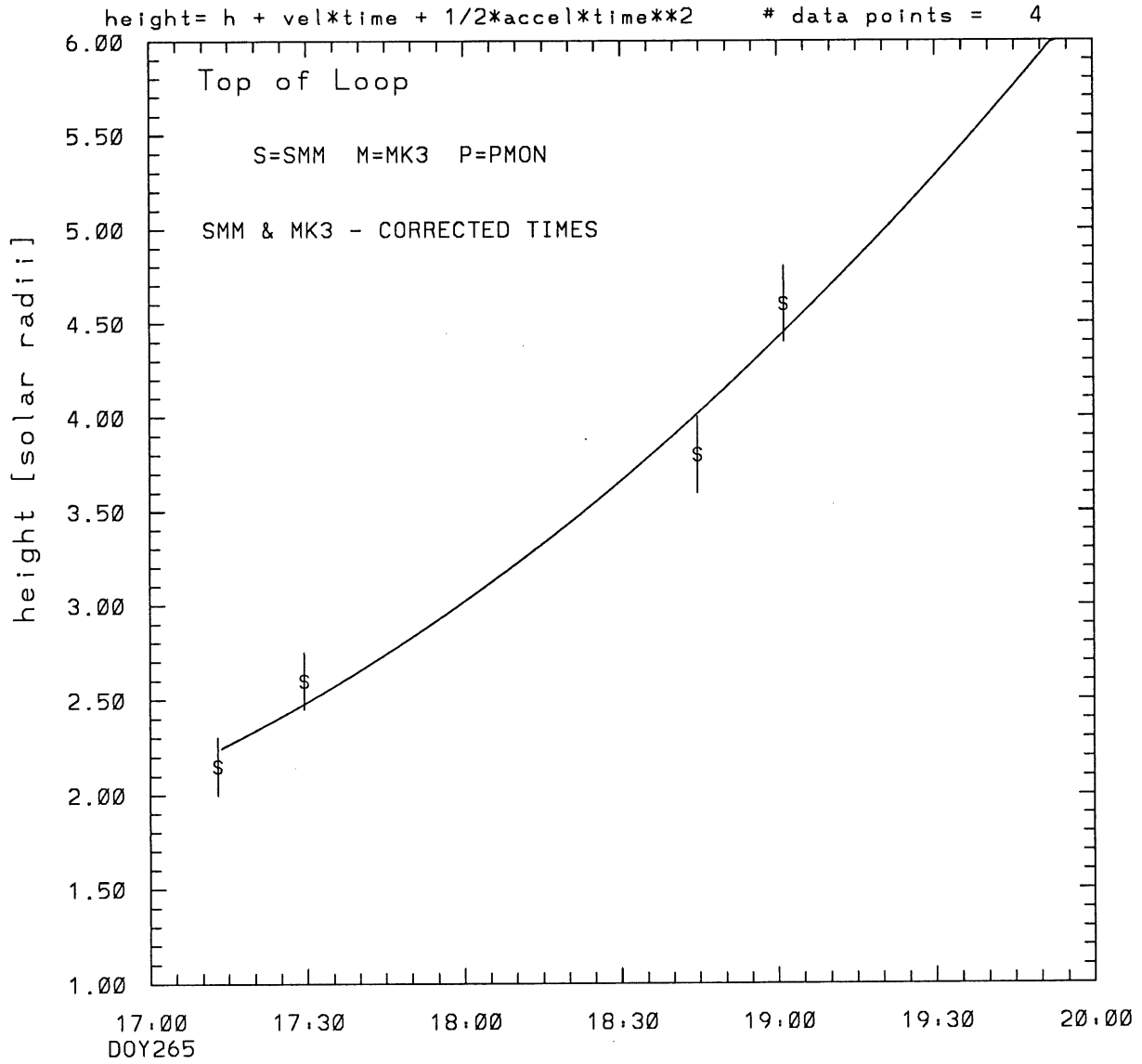DOY265

tstart=DOY265 16:15 +/-   2.6 [min.]
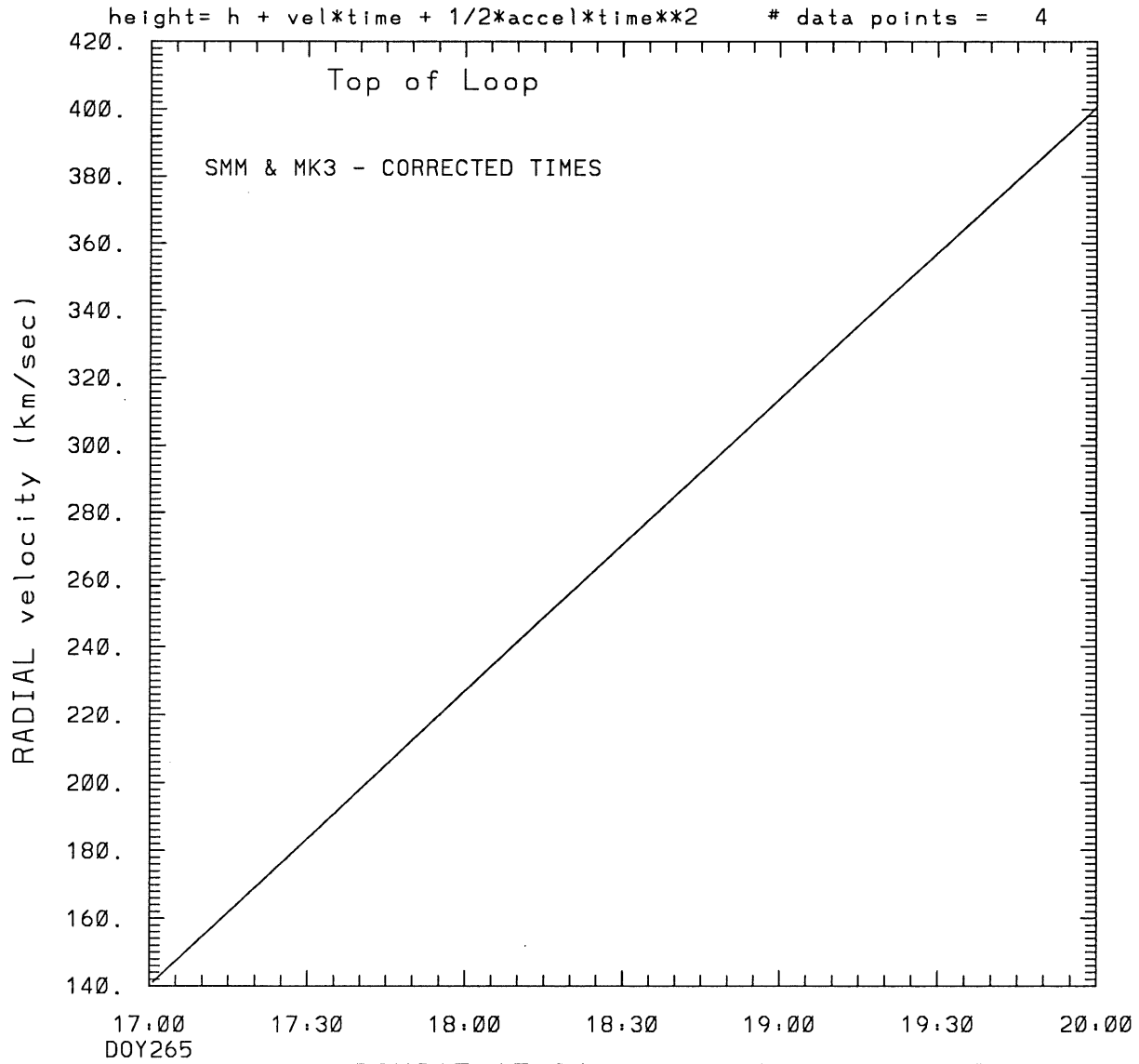radial velocity= 237. +/- 22. [km/sec]

SMM C/P 1989 DOY265 145 +/- 0 degrees

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

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

17:00   17:30   18:00   18:30   19:00   19:30   20:00
DOY265

tstart=DOY265 15:24   from derivative=0
Event begins at   1.48 Solar Radii
radial acceleration= 0.0241 +/- 0.0507 [km/sec**2]
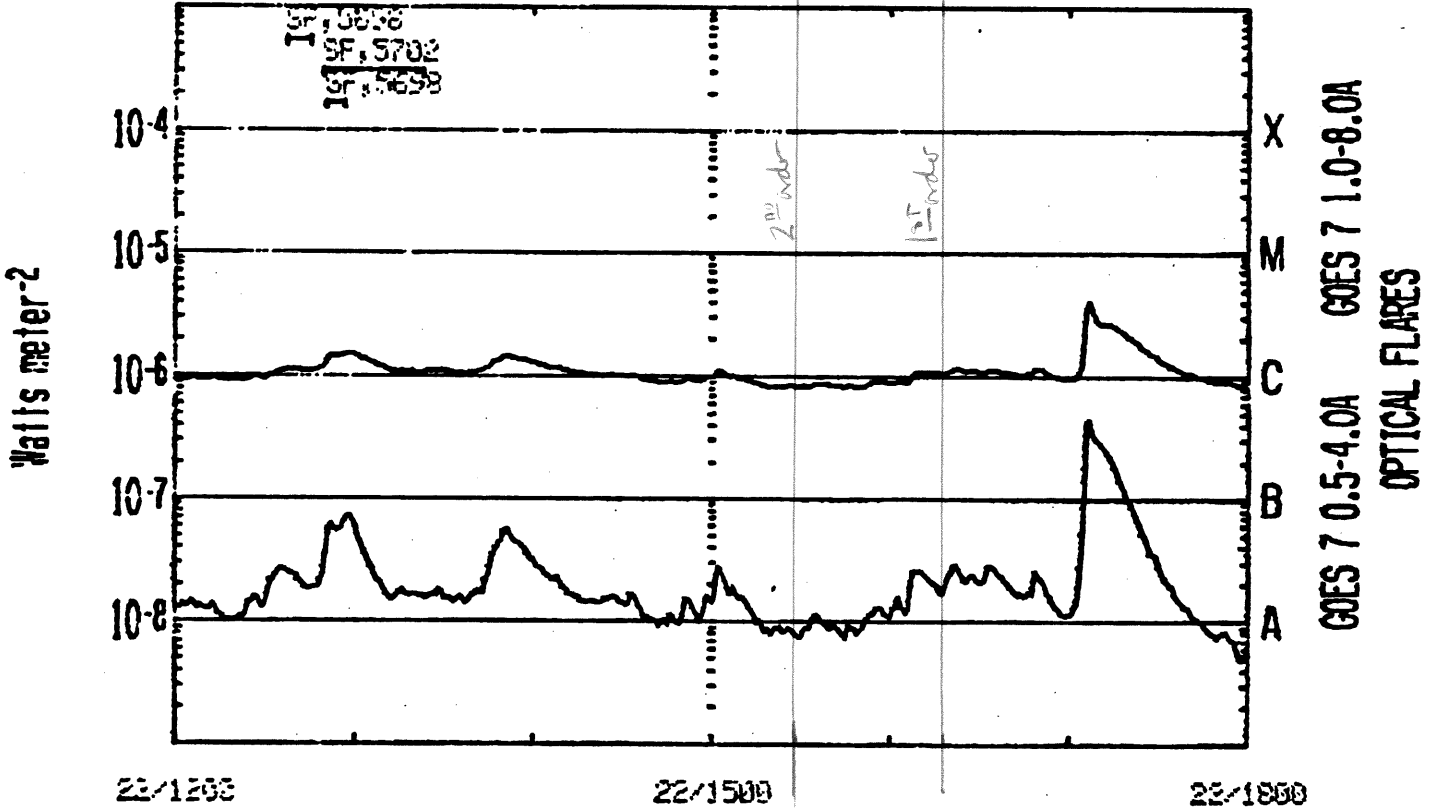
SMM C/P 1989 DOY265 145 +/- 0 degrees

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

Top of Loop

SMM & MK3 - CORRECTED TIMES

RADIAL velocity (km/sec)

420.
400.
380.
360.
340.
320.
300.
280.
260.
240.
220.
200.
180.
160.
140.

17:00   17:30   18:00   18:30   19:00   19:30   20:00
DOY265

tstart=DOY265 15:24   from derivative=0
Event begins at   1.48 Solar Radii
radial acceleration=0.241E-01 km/sec**2

X and OPTICAL DATA TOGETHER

STOP
Ret..

Top of Front [15:17] 2nd ndr

Top of Front onto=113° [16:18] 1st ndr

BEGIN: 22 SEP 89

2nd ndr

1st ndr

Watts meter^{-2}

SF,5858
SF,5702
SF,5858

10^{-4}

10^{-5}

10^{-6}

10^{-7}

10^{-8}

X

M

C

B

A

GOES 7 1.0-8.0A

OPTICAL FLARES

GOES 7 0.5-4.0A

22/1200   22/1500   22/1800

SAA's

NIGHT

GOES-7 1 MIN DATA;   OPTICAL FLARE DUR, IMP, REGION

RUN: 1732UT
27 SEP 89

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

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


                              error in        error in
year doy     time      radii  radius     angle    angle   datatype
1989 265  17:12:53   2.15 +/- 0.15     145.0 +/-  0.5      SMM
1989 265  17:29:23   2.60 +/- 0.15     145.0 +/-  0.5      SMM
1989 265  18:44:41   3.80 +/- 0.20     145.0 +/-  1.0      SMM
1989 265  19: 1:11   4.60 +/- 0.20     145.0 +/-  1.0      SMM


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

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


START TIME:

 Event began at t = 0 + -0.455E+02 +/-  0.261E+01 [minutes]
 In more convenient units:
 Event began at DOY 265 16:15 +/-  0.261E+01 [minutes]

 Origin defined at DOY265 17: 0

RADIAL INFORMATION:

RADIAL VELOCITY =   237. +/-     22. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =     0.193E+01 +/-     0.134E+00 [solar radii]
 c(2) =     0.204E-01 +/-     0.191E-02 [radii/min]
 c(2) =     0.237E+03 +/-     0.221E+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)=  0.21108E+00 [radii] see Bevington pg. 114
                 error in c(2)=  0.25849E-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) = 145. +/-    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 17:12 =  237. km/sec

The RADIAL velocity at 17:29 =  237. km/sec

The RADIAL velocity at 18:44 =  237. km/sec
```

The RADIAL velocity at 19: 1 = 237. km/sec

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

 Fit is ok [ier=1]

 Standard Deviation in the height = 1.12
 Standard Deviation in start time measurement =   0.466E+02
 Error in time =   0.16723E+02 using best fit method
 See Taylor Error Analysis [Univ of Colorado] pg.78

 Value of reduced Chi Squared returned from nllst2 = 0.292E-01
 Reduced Chi Squared = 0.190E+00
 Chi Squared = 0.381E+00
 The probability for exceeding chi square = 0.971E+00

 The correlation coefficient =   0.984E+00
 The probability that no LINEAR correlation exists between the variables =   0.1559]
 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
1989 265  17:12:53   2.15 +/- 0.15     145.0 +/-  0.5      SMM
1989 265  17:29:23   2.60 +/- 0.15     145.0 +/-  0.5      SMM
1989 265  18:44:41   3.80 +/- 0.20     145.0 +/-  1.0      SMM
1989 265  19: 1:11   4.60 +/- 0.20     145.0 +/-  1.0      SMM

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

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

START TIME:

 tstart=DOY265 15:24 from derivative = 0
Event begins at    1.48 Solar Radii
 Origin defined at DOY265 17: 0

RADIAL INFORMATION:

RADIAL ACCELERATION =  0.241E-01 +/-  0.507E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

 c(1) =      0.207E+01 +/-     0.336E+00 [solar radii]
 c(2) =      0.121E-01 +/-     0.176E-01 [radii/min]
 c(2) =      0.140E+03 +/-     0.204E+03 [km/sec]
 c(3) =      0.624E-04 +/-     0.131E-03 [radii/min**2]
 c(3) =      0.241E-01 +/-     0.507E-01 [km/sec**2]

 The computed ERRORS in coefficients [BEVINGTON] are:

    Approximate error in c(1) =   0.53526E+00 [radii] Bevington pg 154 (8-30)
          Exact error in c(1) =   0.19114E+00 [radii] Bevington pg 154 (8-28)
    Approximate error in c(2) =   0.27062E-01 [radii/min] Bevington pg 154 (8-30)
          Exact error in c(2) =   0.11485E-01 [radii/min] Bevington pg 154 (8-28)
    Approximate error in c(3) =   0.20039E-03 [radii/min**2] Bevington pg 154 (8-30)
          Exact error in c(3) =   0.86015E-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) = 145. +/-    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 17:12 =   159. km/sec

The RADIAL velocity at 17:29 =   183. km/sec
```

The RADIAL velocity at 18:44 = 292. km/sec

The RADIAL velocity at 19: 1 = 315. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 1.12
Standard Deviation in start time measurement =   0.466E+02
Value of reduced Chi Squared returned from nllst2 = 0.394E-01
Reduced Chi Squared = 0.270E+00
Chi Squared = 0.270E+00
The probability for exceeding chi square = 0.843E+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 =   0.9880E+00
The correlation between the data and the time**2 term =   0.9809E+00
The correlation between the data and the complete equation of motion=0.9807E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]