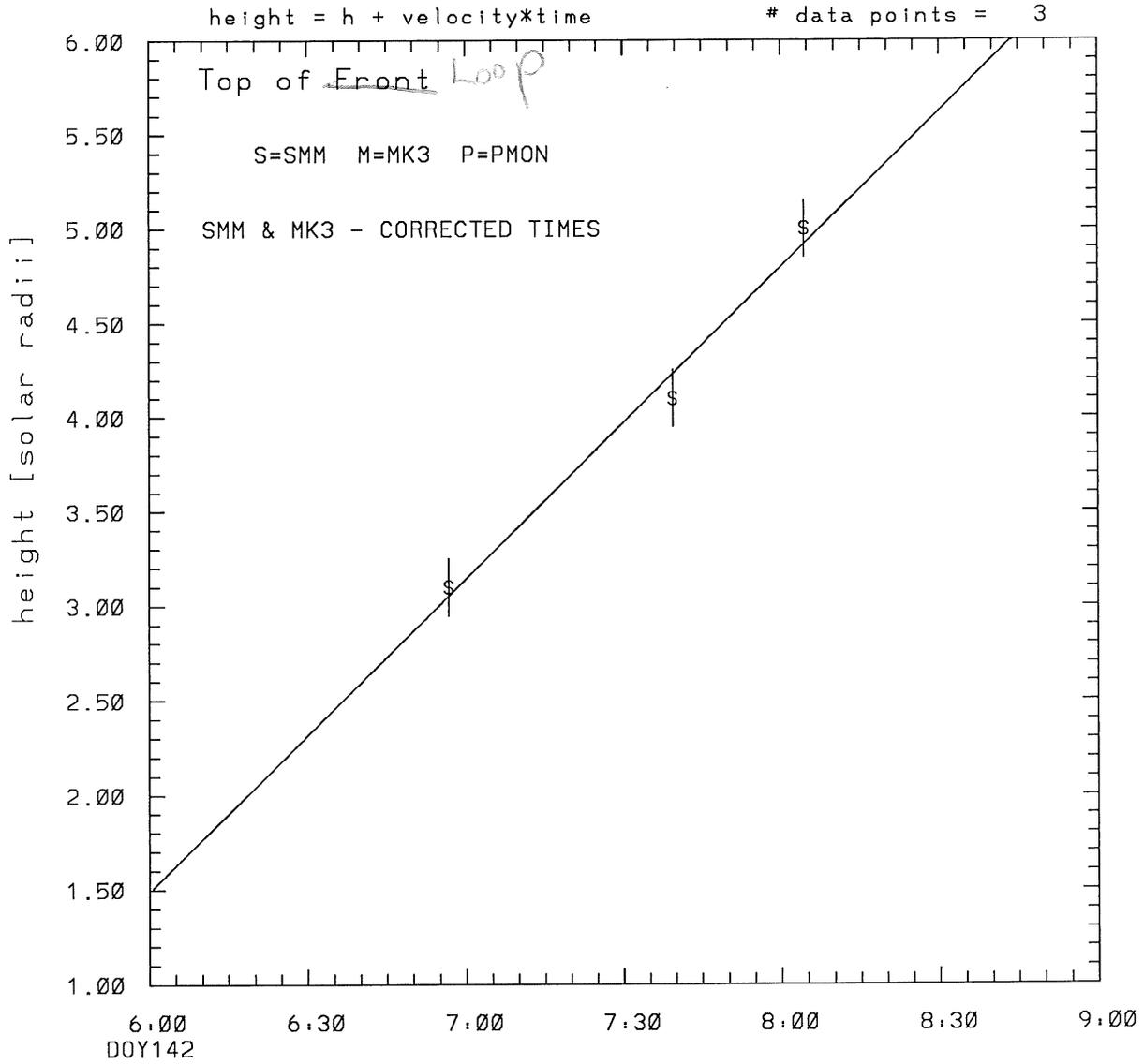
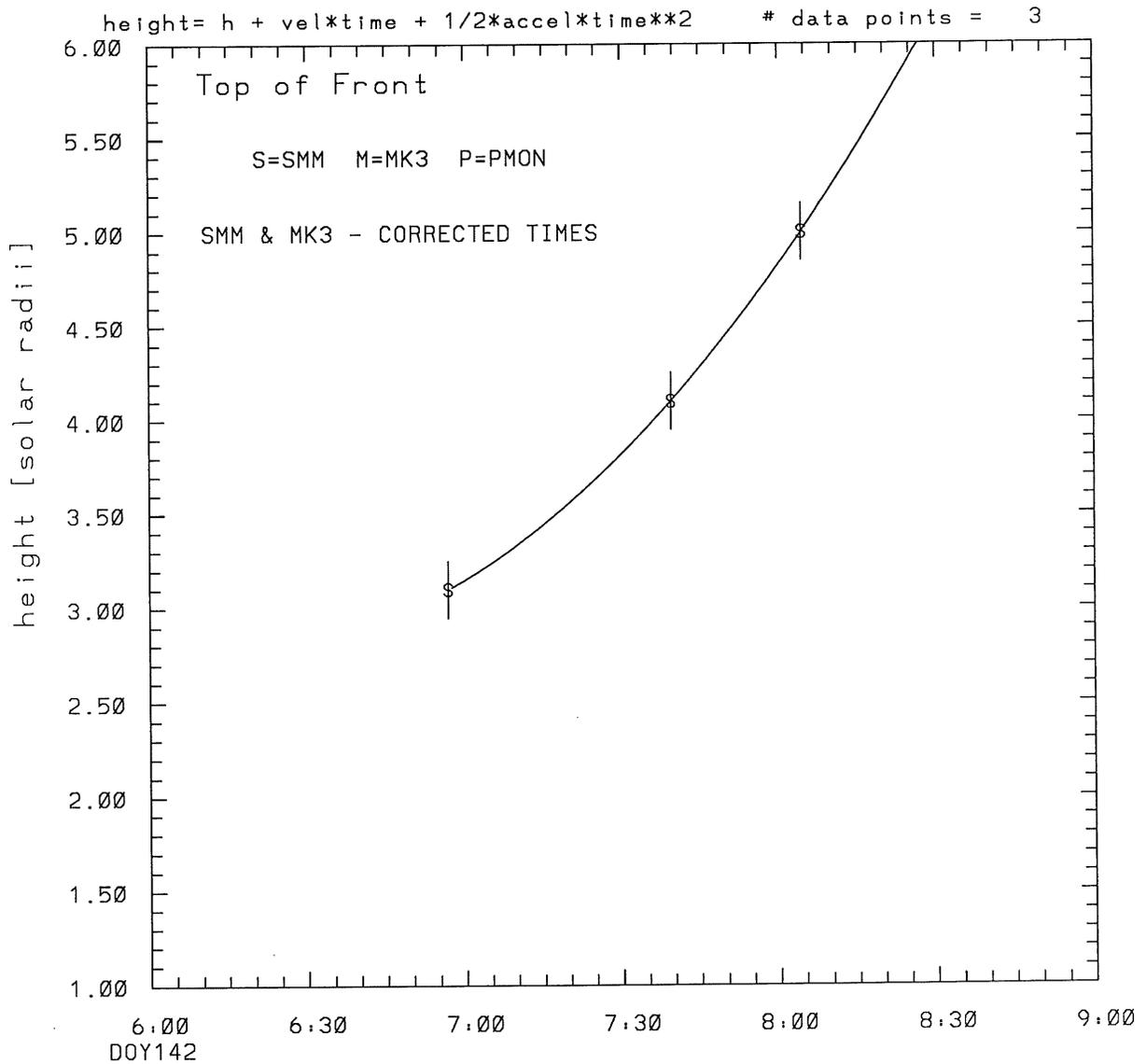


SMM C/P 1989 DOY142 210 +/- 0 degrees



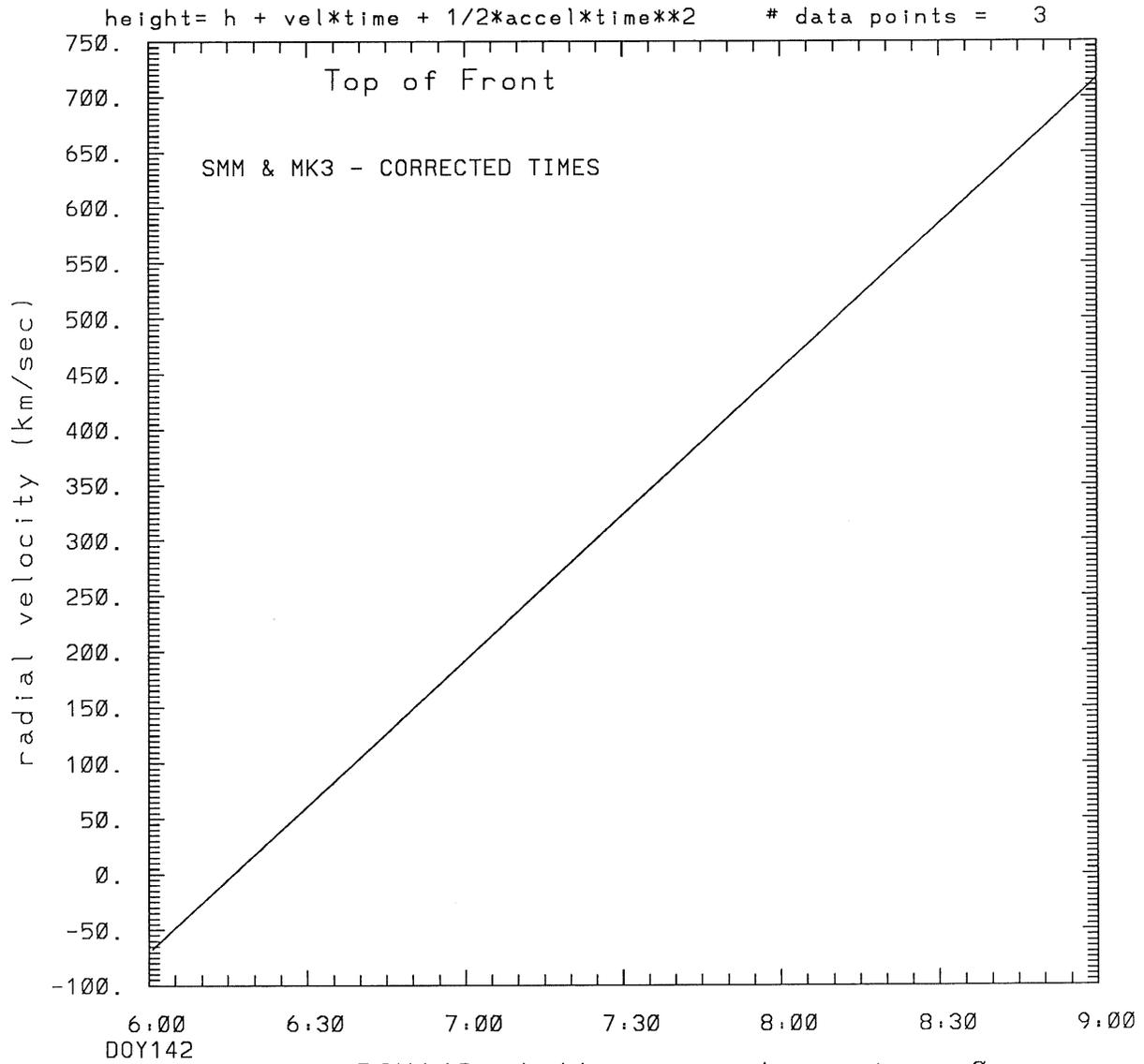
tstart=DOY142 5:44 +/- 1.6 [min.]  
radial velocity= 320. +/- 27. [km/sec]

SMM C/P 1989 DOY142 210 +/- 0 degrees



tstart=DOY142 6:16 from derivative=0  
Event begins at 2.79 Solar Radii  
radial acceleration = 0.0728 +/- 0.0000 [km/sec\*\*2]

SMM C/P 1989 DOY142 210 +/- 0 degrees



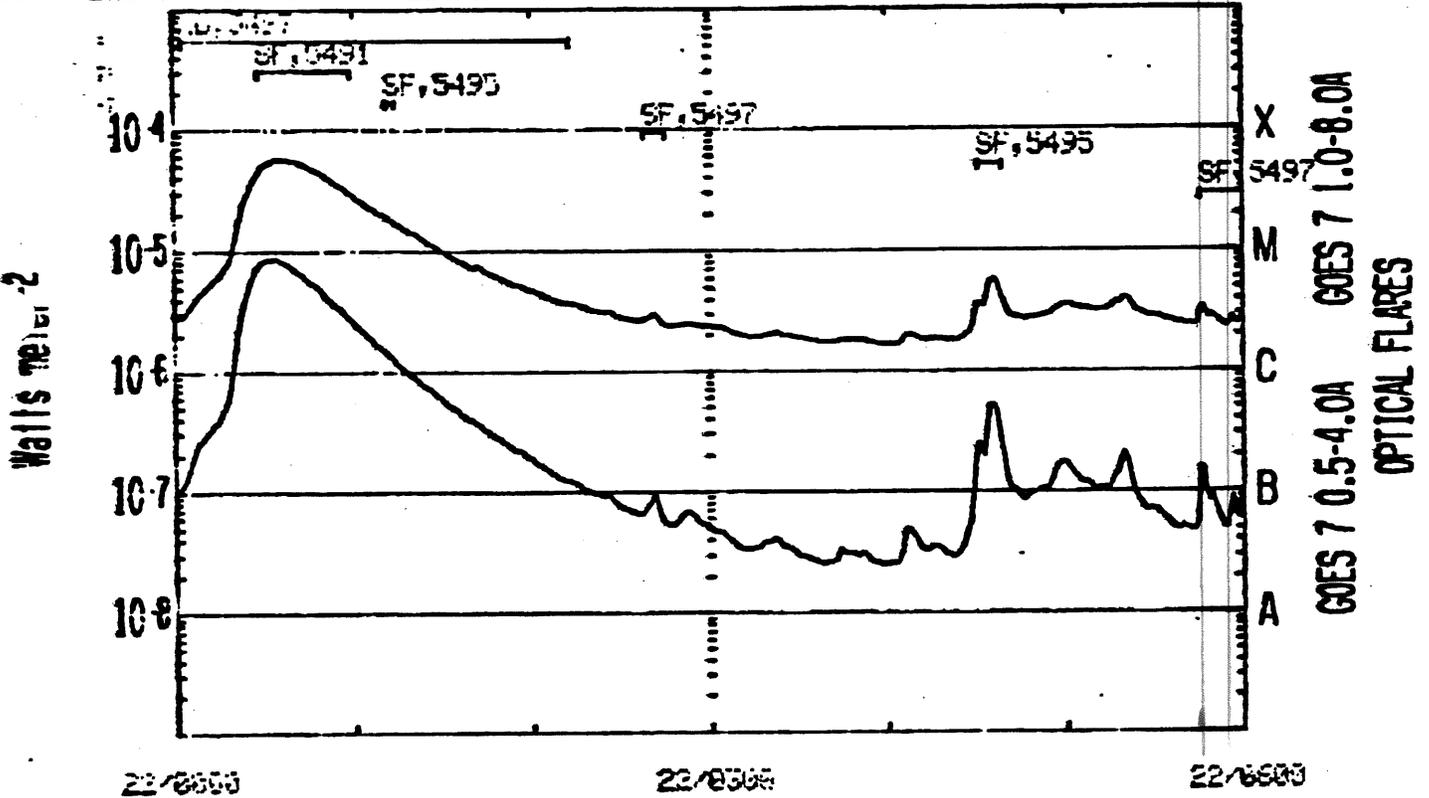
tstart=DOY142 6:16 from derivative=0  
Event begins at 2.79 Solar Radii  
radial acceleration=0.728E-01 km/sec\*\*2

1989, Day 142

SAF and OPTICAL DATA TOGETHER

Pat.

BEGIN: 22 MAY 89



GOES-7 1 MIN DATA: OPTICAL FLARE DUR. IMP. REGION

RUN: 1822UT 26 MAY 89

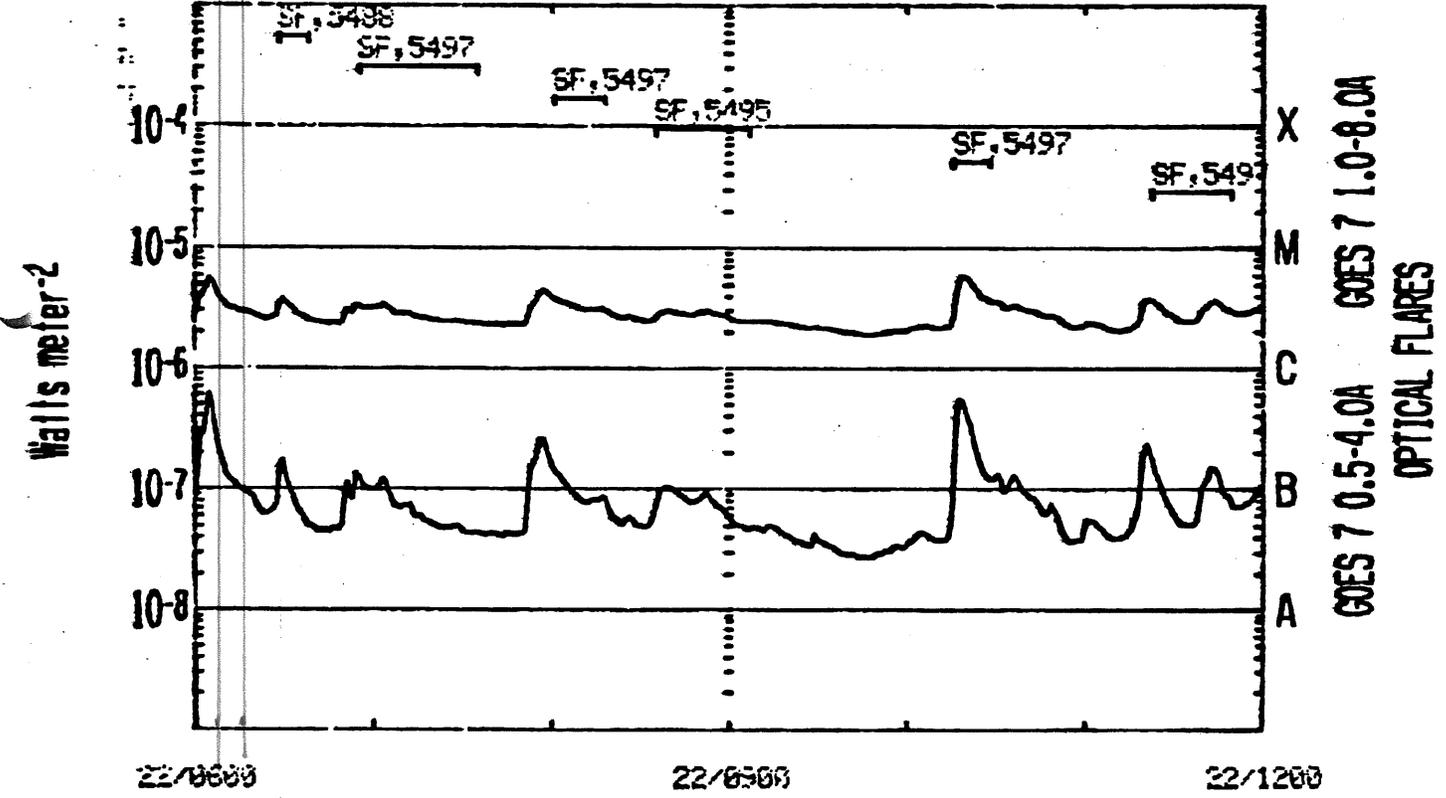
SAA's NIGHT

See next page

1989 Day 142

Top of Prominence Loop, 1st order [6:07]  
Top of Front, 2nd order [6:16]

SAAS AND OPTICAL DATA TOGETHER STOP Ret. BEGIN: 22 MAY 89



SAAS NIGHT

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

BUH: 1828UT  
26 MAY 89

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This is a 1 order run

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\*\*\*\*\*

INPUT:

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year	day	time	radii	error in radius	angle	error in angle	datatype
1989	142	6:56:44	3.10	+/- 0.15	210.0	+/- 1.0	SMM
1989	142	7:39:31	4.10	+/- 0.15	210.0	+/- 1.0	SMM
1989	142	8: 4:26	5.00	+/- 0.15	210.0	+/- 1.0	SMM

\*\*\*\*\*

Structure being measured:

Top of Front

\*\*\*\*\*

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OUTPUT:

\*\*\*\*\*

START TIME:

Event began at  $t = 0 + -0.177E+02 +/- 0.159E+01$  [minutes]

In more convenient units:

Event began at DOY 142 5:44 +/- 0.159E+01 [minutes]

Origin defined at DOY142 6: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 320. +/- 27. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) = 0.149E+01 +/- 0.231E+00$  [solar radii]

$c(2) = 0.276E-01 +/- 0.237E-02$  [radii/min]

$c(2) = 0.320E+03 +/- 0.274E+02$  [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  $c(1) = 0.32671E+00$  [radii] see Bevington pg. 114

error in  $c(2) = 0.33457E-02$  [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) = 210. +/- 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 6:56 = 0. km/sec

The TOTAL velocity at 6:56 = 320. km/sec

The TANGENTIAL velocity at 7:39 = 0. km/sec

The TOTAL velocity at 7:39 = 320. km/sec

The TANGENTIAL velocity at 8: 4 = 0. km/sec

The TOTAL velocity at 8: 4 = 320. km/sec

\*\*\*\*\*

The following info is for estimating goodness of the fit

\*\*\*\*\*

Fit is ok [ier=1]

Standard Deviation in the height = 0.95

Standard Deviation in start time measurement = 0.280E+02

Error in time = 0.58796E+01 using best fit method

See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.131E-01

Reduced Chi Squared = 0.570E-01

Chi Squared = 0.570E-01

The probability for exceeding chi square = 0.909E+00

The correlation coefficient = 0.993E+00

The probability that no LINEAR correlation exists between the variables = 0.7692E-01

SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

\*\*\*\*\*

This is a 2 order run

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\*\*\*\*\*

INPUT:

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year	doy	time	radii	radius	error in	angle	error in	angle	datatype
1989	142	6:56:44	3.10	+/- 0.15	210.0	+/- 1.0			SMM
1989	142	7:39:31	4.10	+/- 0.15	210.0	+/- 1.0			SMM
1989	142	8: 4:26	5.00	+/- 0.15	210.0	+/- 1.0			SMM

\*\*\*\*\*

Structure being measured:

Top of Front

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OUTPUT:

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START TIME:

tstart=DOY142 6:16 from derivative = 0  
Event begins at 2.79 Solar Radii  
Origin defined at DOY142 6: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.728E-01 +/- 0.321E-06 km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.284E+01 +/- 0.613E-05 [solar radii]  
c(2) = -0.605E-02 +/- 0.149E-06 [radii/min]  
c(2) = -0.701E+02 +/- 0.173E-02 [km/sec]  
c(3) = 0.188E-03 +/- 0.831E-09 [radii/min\*\*2]  
c(3) = 0.728E-01 +/- 0.321E-06 [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) = 210. +/- 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 6:56 = 0. km/sec

The TOTAL velocity at 6:56 = 178. km/sec

The TANGENTIAL velocity at 7:39 = 0. km/sec

The TOTAL velocity at 7:39 = 365. km/sec

The TANGENTIAL velocity at 8: 4 = 0. km/sec

The TOTAL velocity at 8: 4 = 473. km/sec

\*\*\*\*\*

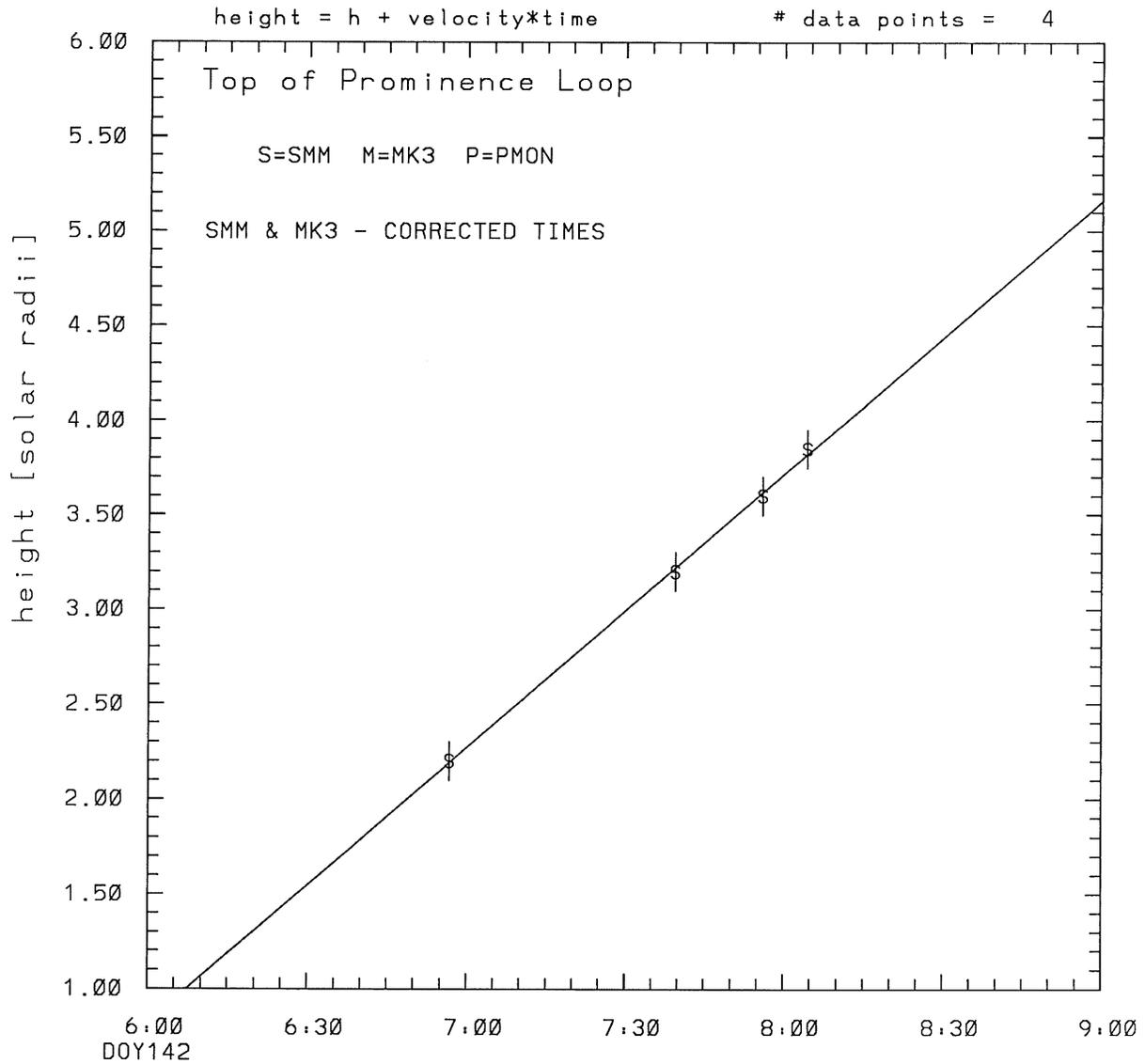
The following info is for estimating goodness of the fit

\*\*\*\*\*

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

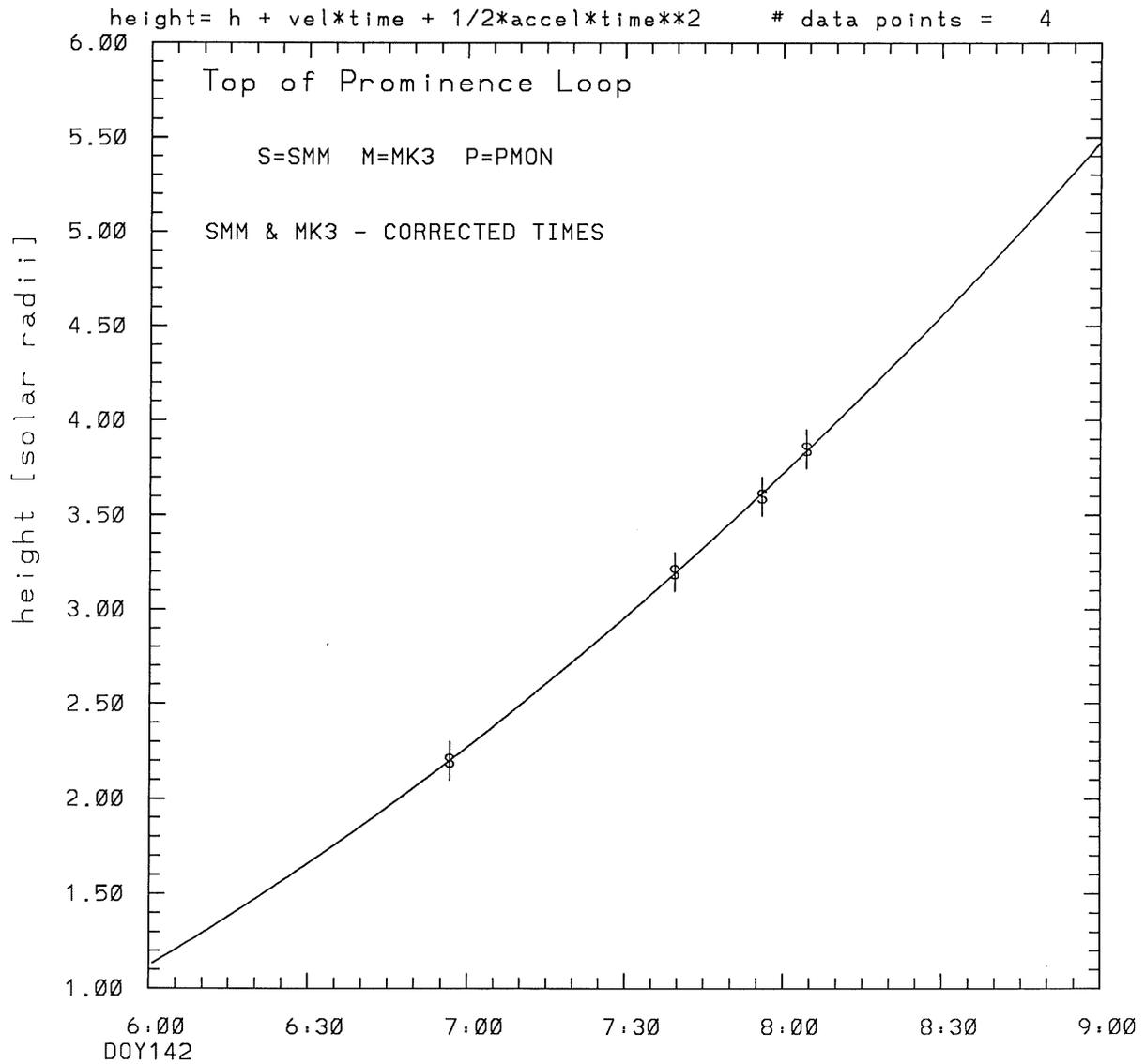
Correlation coefficient is not computable!

SMM C/P 1989 DOY142 210 +/- 0 degrees



tstart=DOY142 6: 7 +/- 0.2 [min.]  
radial velocity= 279. +/- 5. [km/sec]

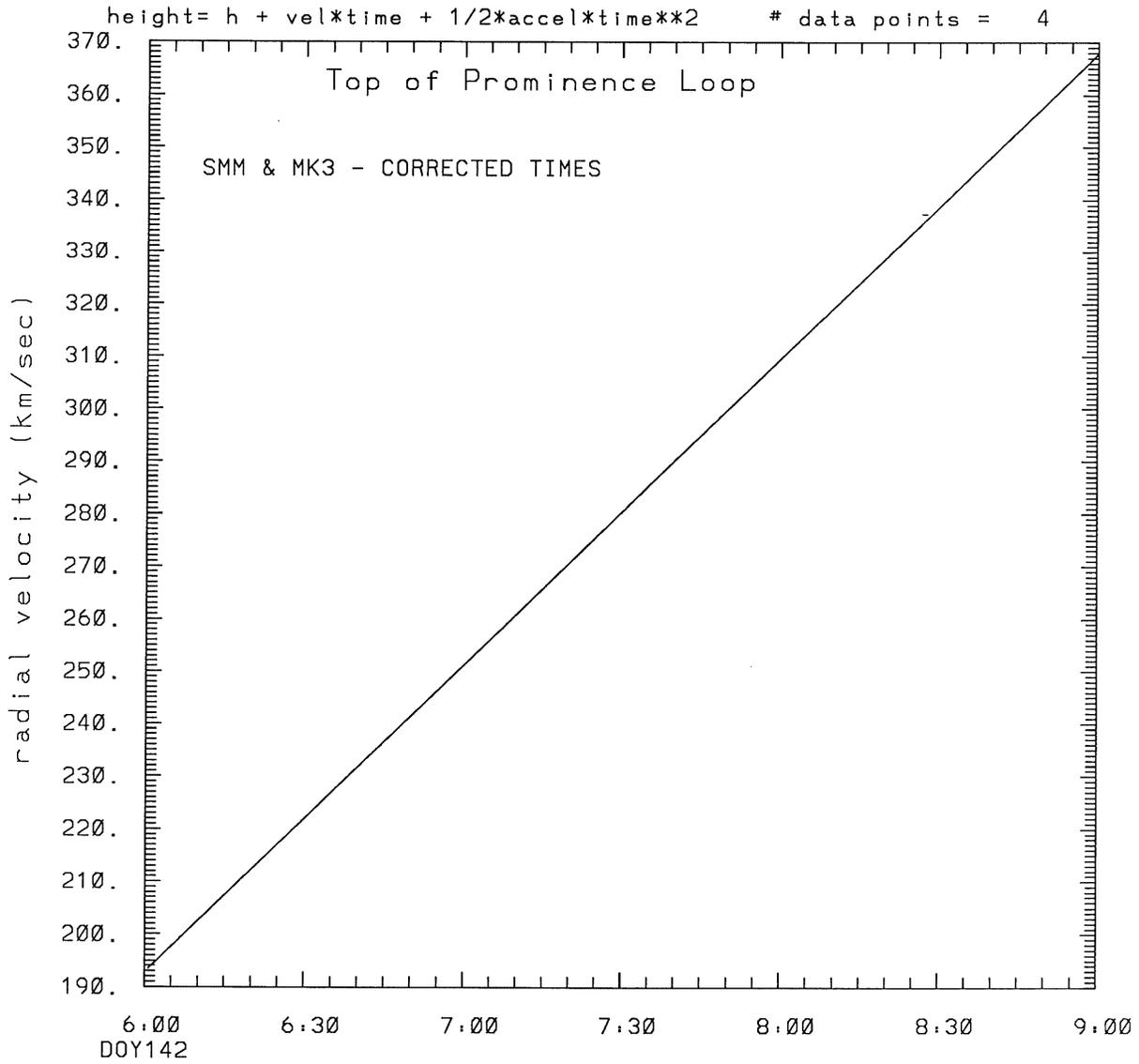
SMM C/P 1989 DOY142 210 +/- 0 degrees



tstart=DOY142 5.54 +/- 1.9 [min.]

radial acceleration = 0.0162 +/- 0.0068 [km/sec\*\*2]

SMM C/P 1989 DOY142 210 +/- 0 degrees



tstart=DOY142 5:54 +/- 1.9 [min.]

radial acceleration=0.162E-01 km/sec\*\*2

\*\*\*\*\*

This is a 1 order run

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\*\*\*\*\*

INPUT:

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year	doy	time	radii	error in radius	angle	error in angle	datatype
1989	142	6:56:44	2.20	+/- 0.10	210.0	+/- 1.0	SMM
1989	142	7:39:31	3.20	+/- 0.10	210.0	+/- 1.0	SMM
1989	142	7:56: 5	3.60	+/- 0.10	210.0	+/- 1.0	SMM
1989	142	8: 4:26	3.85	+/- 0.10	210.0	+/- 1.0	SMM

\*\*\*\*\*

Structure being measured:

Top of Prominence Loop

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OUTPUT:

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START TIME:

Event began at  $t = 0 + 0.731E+01 \pm 0.160E+00$  [minutes]

In more convenient units:

Event began at DOY 142 6: 7  $\pm 0.160E+00$  [minutes]

Origin defined at DOY142 6: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 279.  $\pm$  5. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) = 0.824E+00 \pm 0.476E-01$  [solar radii]  
 $c(2) = 0.241E-01 \pm 0.464E-03$  [radii/min]  
 $c(2) = 0.279E+03 \pm 0.539E+01$  [km/sec]  
 $c(3) = 0.000E+00 \pm 0.000E+00$  [radii/min\*\*2]  
 $c(3) = 0.000E+00 \pm 0.000E+00$  [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

error in  $c(1) = 0.58328E-01$  [radii] see Bevington pg. 114

error in  $c(2) = 0.56867E-03$  [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = 0.0000E+00  $\pm$  0.0000E+00 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 210. +/- 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 6:56 = 0. km/sec

The TOTAL velocity at 6:56 = 279. km/sec

The TANGENTIAL velocity at 7:39 = 0. km/sec

The TOTAL velocity at 7:39 = 279. km/sec

The TANGENTIAL velocity at 7:56 = 0. km/sec

The TOTAL velocity at 7:56 = 279. km/sec

The TANGENTIAL velocity at 8: 4 = 0. km/sec

The TOTAL velocity at 8: 4 = 279. km/sec

\*\*\*\*\*

The following info is for estimating goodness of the fit

\*\*\*\*\*

Fit is ok [ier=1]

Standard Deviation in the height = 0.73

Standard Deviation in start time measurement = 0.261E+02

Error in time = 0.17436E+01 using best fit method

See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.588E-03

Reduced Chi Squared = 0.278E-02

Chi Squared = 0.556E-02

The probability for exceeding chi square = 0.999E+00

The correlation coefficient = 0.999E+00

The probability that no LINEAR correlation exists between the variables = 0.5568E-03

SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

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This is a 2 order run

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\*\*\*\*\*

INPUT:

\*\*\*\*\*

year	doy	time	radii	error in radius	error in angle	angle	datatype
1989	142	6:56:44	2.20	+/- 0.10	210.0	+/- 1.0	SMM
1989	142	7:39:31	3.20	+/- 0.10	210.0	+/- 1.0	SMM
1989	142	7:56: 5	3.60	+/- 0.10	210.0	+/- 1.0	SMM
1989	142	8: 4:26	3.85	+/- 0.10	210.0	+/- 1.0	SMM

\*\*\*\*\*

Structure being measured:

Top of Prominence Loop

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OUTPUT:

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START TIME:

Event began at  $t = 0 + -0.754E+01 +/- 0.191E+01$  [minutes]

In more convenient units:

Event began at DOY 142 5:54 +/- 0.191E+01 [minutes]

Origin defined at DOY142 6: 0

RADIAL INFORMATION:

RADIAL ACCELERATION =  $0.162E-01 +/- 0.676E-02$  km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) = 0.112E+01 +/- 0.128E+00$  [solar radii]  
 $c(2) = 0.166E-01 +/- 0.312E-02$  [radii/min]  
 $c(2) = 0.193E+03 +/- 0.362E+02$  [km/sec]  
 $c(3) = 0.419E-04 +/- 0.175E-04$  [radii/min\*\*2]  
 $c(3) = 0.162E-01 +/- 0.676E-02$  [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in  $c(1) = 0.18125E+00$  [radii] Bevington pg 154 (8-30)

Exact error in  $c(1) = 0.62407E-01$  [radii] Bevington pg 154 (8-28)

Approximate error in  $c(2) = 0.44188E-02$  [radii/min] Bevington pg 154 (8-30)

Exact error in  $c(2) = 0.16370E-02$  [radii/min] Bevington pg 154 (8-28)

Approximate error in  $c(3) = 0.24723E-04$  [radii/min\*\*] Bevington pg 154 (8-30)

Exact error in  $c(3) = 0.95091E-05$  [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) = 210. +/- 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 6:56 = 0. km/sec

The TOTAL velocity at 6:56 = 248. km/sec

The TANGENTIAL velocity at 7:39 = 0. km/sec

The TOTAL velocity at 7:39 = 290. km/sec

The TANGENTIAL velocity at 7:56 = 0. km/sec

The TOTAL velocity at 7:56 = 306. km/sec

The TANGENTIAL velocity at 8: 4 = 0. km/sec

The TOTAL velocity at 8: 4 = 314. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.73

Standard Deviation in start time measurement = 0.261E+02

Value of reduced Chi Squared returned from nllst2 = 0.228E-03

Reduced Chi Squared = 0.140E-02

Chi Squared = 0.140E-02

The probability for exceeding chi square = 0.988E+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 = 0.9994E+00

The correlation between the data and the time\*\*2 term = 0.9978E+00

The correlation between the data and the complete equation of motion = 0.9997E+00

SEE BEVINGTON "Data Reduction and Error Analysis" [1969]