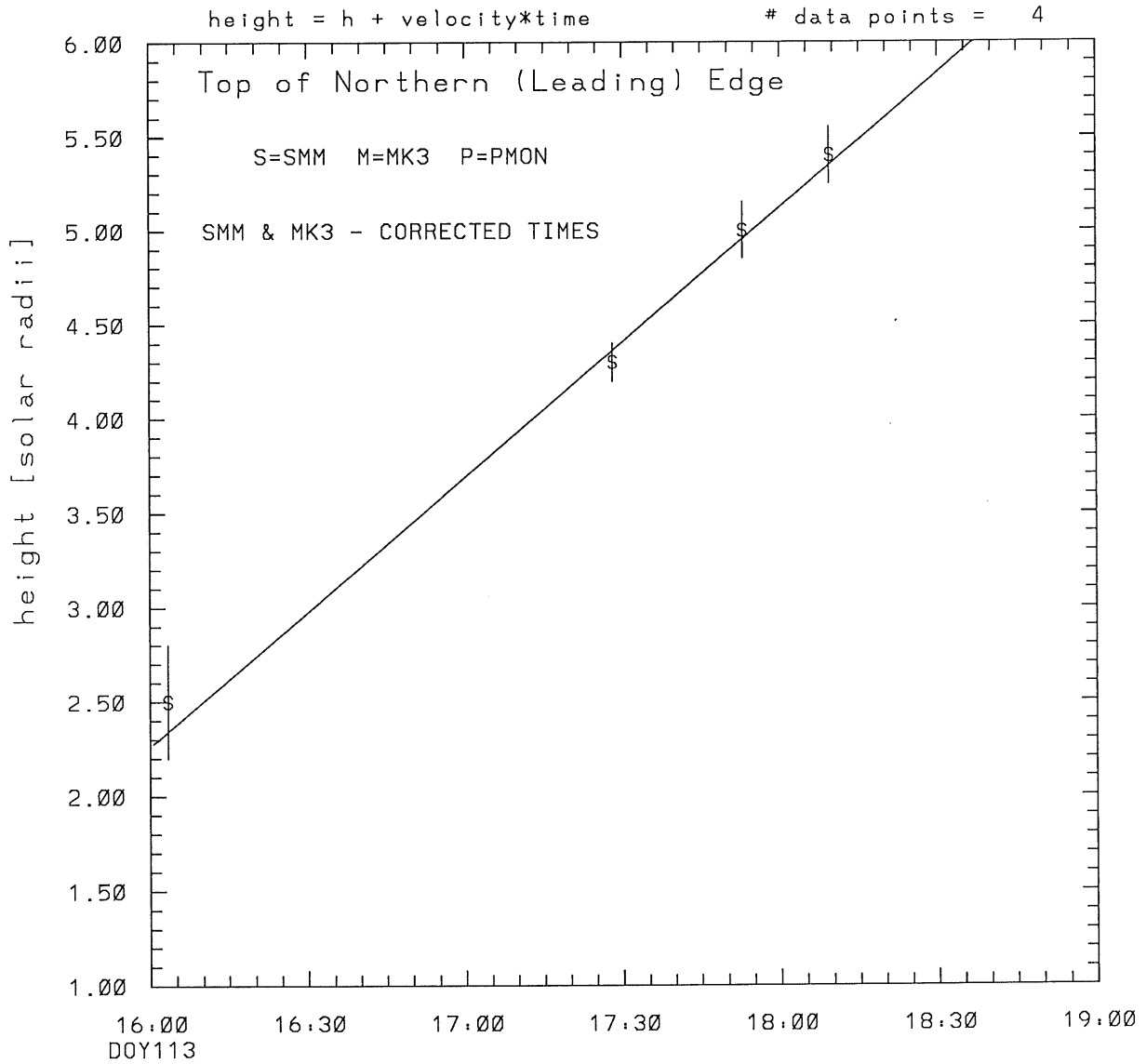
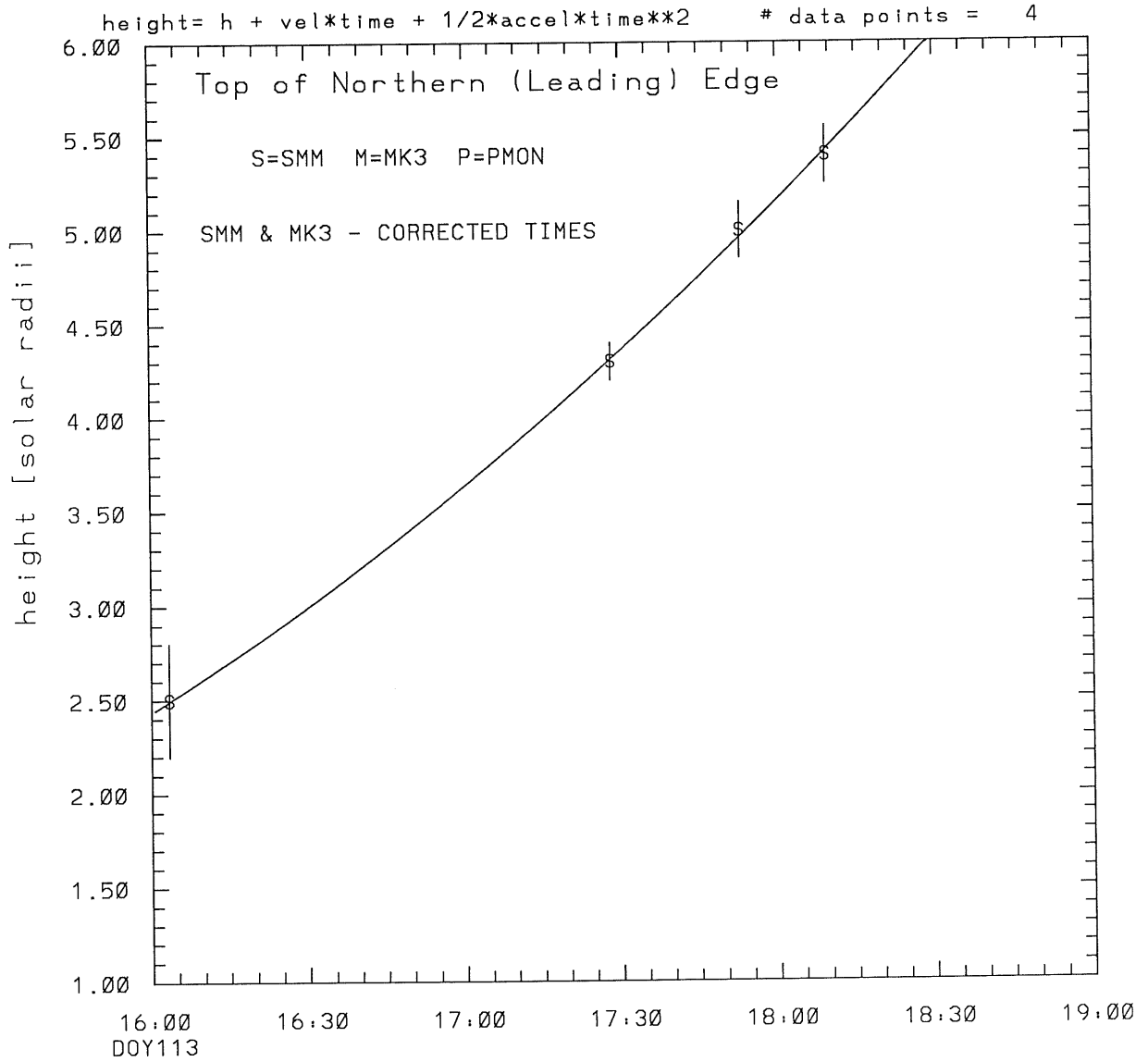


SMM C/P 1989 DOY113 280 +/- 0 degrees



tstart=DOY113 15: 9 +/- 2.9 [min.]  
radial velocity= 277. +/- 16. [km/sec]

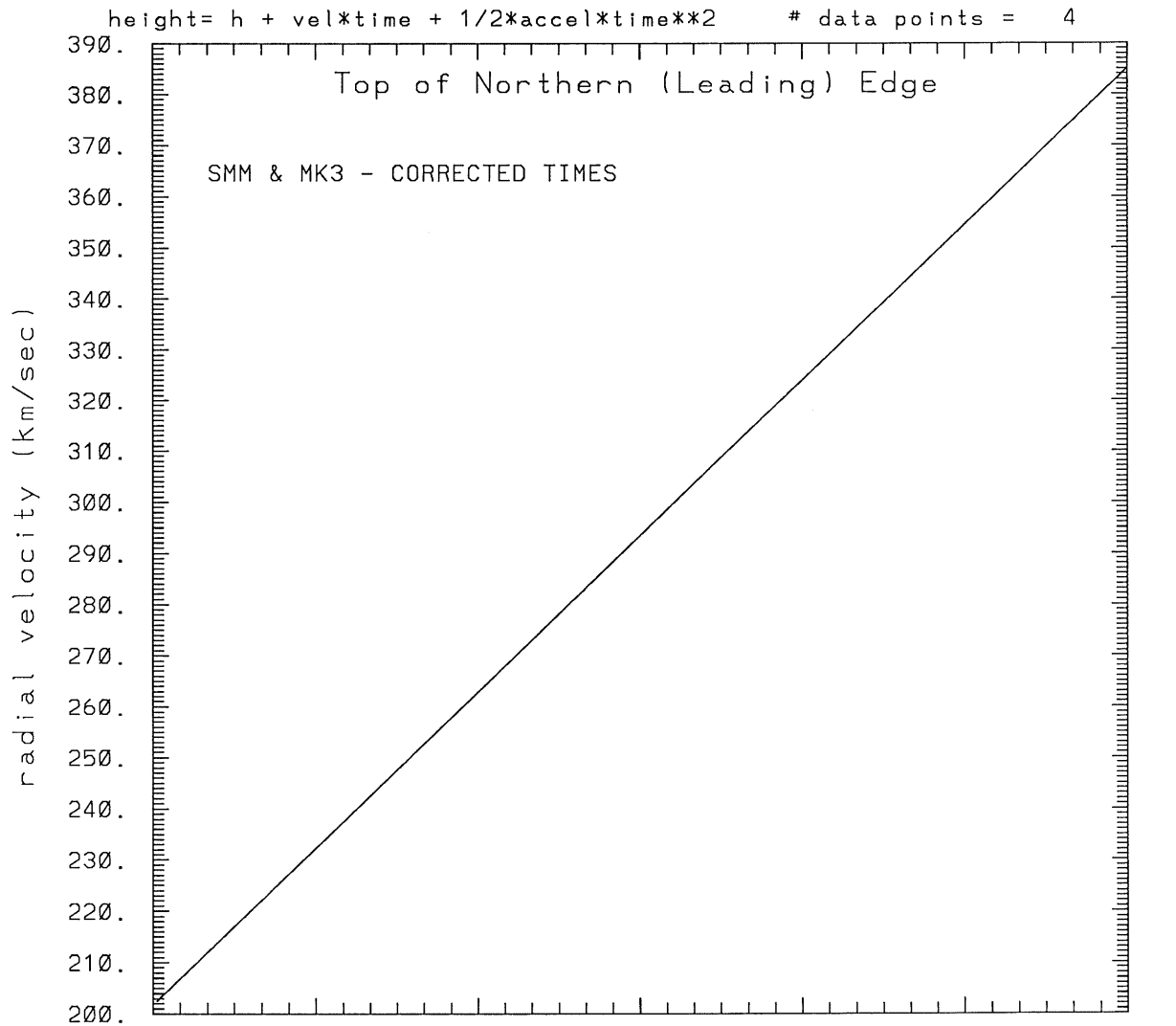
SMM C/P 1989 DOY113 280 +/- 0 degrees



tstart=DOY113 14: 3 +/- 13.6 [min.]

radial acceleration = 0.0170 +/- 0.0044 [km/sec\*\*2]

SMM C/P 1989 DOY113 280 +/- 0 degrees



16:00  
DOY113

tstart=DOY113 14: 3 +/- 13.6 [min.]

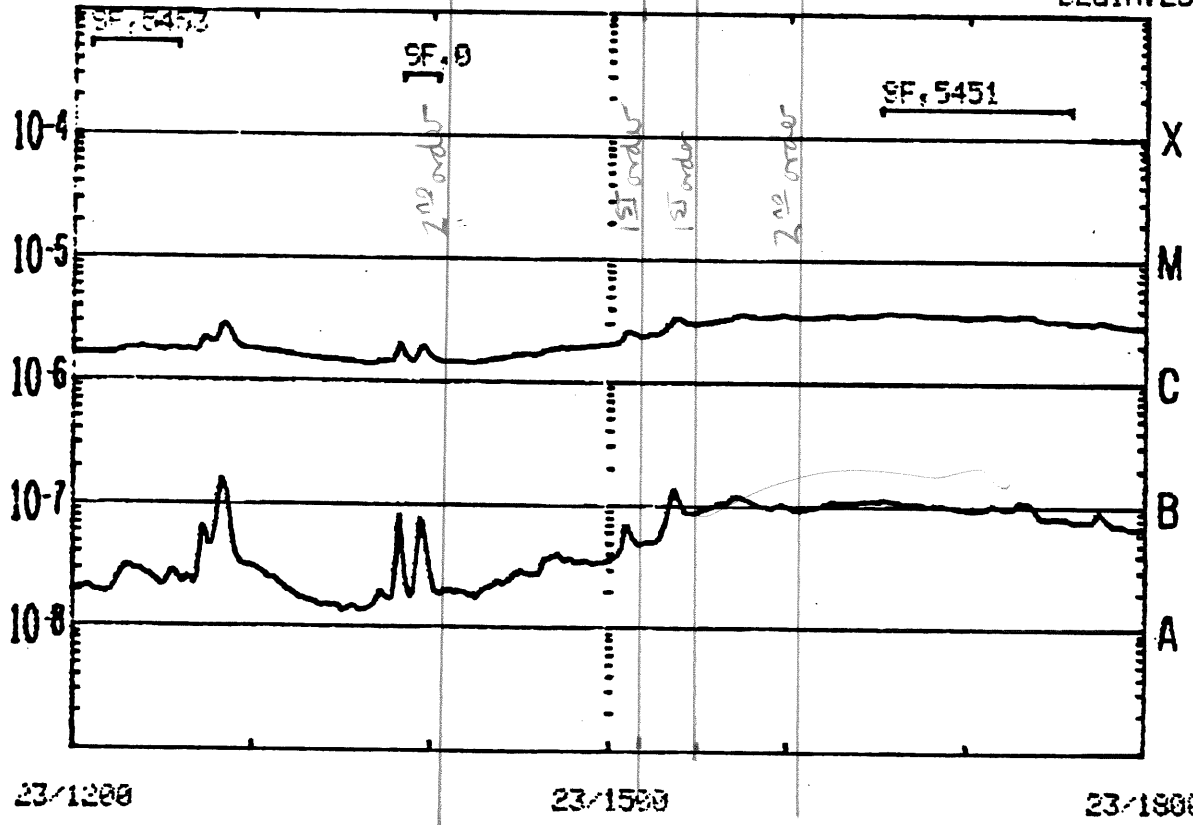
radial acceleration=0.170E-01 km/sec\*\*2

1989 Day 13

SPHY and OPTICAL DATA TOGETHER

BEGIN: 23 APR 89

Watts meter<sup>2</sup>



GOES 7 0.5-4.0A GOES 7 1.0-8.0A  
OPTICAL FLARES

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

SAA's NIGHT  
RUN: 172SUT  
24 APR 89

\*\*\*\*\*  
This is a 1 order run  
\*\*\*\*\*

\*\*\*\*\*  
INPUT:  
\*\*\*\*\*

year	day	time	error in radii	error in radius	error in angle	error in angle	datatype
1989	113	16: 3:22	2.50 +/- 0.30	280.0 +/- 0.5	280.0 +/- 0.5	280.0 +/- 0.5	SMM
1989	113	17:28:10	4.30 +/- 0.10	280.0 +/- 1.0	280.0 +/- 1.0	280.0 +/- 1.0	SMM
1989	113	17:52:56	5.00 +/- 0.15	280.0 +/- 1.0	280.0 +/- 1.0	280.0 +/- 1.0	SMM
1989	113	18: 9:26	5.40 +/- 0.15	280.0 +/- 1.0	280.0 +/- 1.0	280.0 +/- 1.0	SMM

\*\*\*\*\*  
Structure being measured:  
Top of Northern (Leading) Edge  
\*\*\*\*\*

\*\*\*\*\*  
OUTPUT:  
\*\*\*\*\*

START TIME:

Event began at  $t = 0 + -0.529E+02 \pm 0.289E+01$  [minutes]  
In more convenient units:  
Event began at DOY 113 15: 9  $\pm 0.289E+01$  [minutes]

Origin defined at DOY113 16: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 277.  $\pm$  16. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) = 0.226E+01 \pm 0.139E+00$  [solar radii]  
 $c(2) = 0.238E-01 \pm 0.136E-02$  [radii/min]  
 $c(2) = 0.277E+03 \pm 0.157E+02$  [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  $c(1) = 0.13046E+00$  [radii] see Bevington pg. 114  
error in  $c(2) = 0.13512E-02$  [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) = 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 16: 3 = 0. km/sec  
The TOTAL velocity at 16: 3 = 277. km/sec

The TANGENTIAL velocity at 17:28 = 0. km/sec  
The TOTAL velocity at 17:28 = 277. km/sec

The TANGENTIAL velocity at 17:52 = 0. km/sec  
The TOTAL velocity at 17:52 = 277. km/sec

The TANGENTIAL velocity at 18: 9 = 0. km/sec  
The TOTAL velocity at 18: 9 = 277. km/sec

\*\*\*\*\*

The following info is for estimating goodness of the fit

\*\*\*\*\*

Fit is ok [ier=1]

Standard Deviation in the height = 1.28  
Standard Deviation in start time measurement = 0.485E+02  
Error in time = 0.77783E+01 using best fit method  
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.599E-02  
Reduced Chi Squared = 0.257E-01  
Chi Squared = 0.514E-01  
The probability for exceeding chi square = 0.994E+00

The correlation coefficient = 0.998E+00  
The probability that no LINEAR correlation exists between the variables = 0.1583E-02  
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

\*\*\*\*\*

This is a 2 order run

\*\*\*\*\*

\*\*\*\*\*

INPUT:

\*\*\*\*\*

year	day	time	error in radii	error in radius	error in angle	error in angle	datatype
1989	113	16: 3:22	2.50 +/- 0.30		280.0 +/- 0.5		SMM
1989	113	17:28:10	4.30 +/- 0.10		280.0 +/- 1.0		SMM
1989	113	17:52:56	5.00 +/- 0.15		280.0 +/- 1.0		SMM
1989	113	18: 9:26	5.40 +/- 0.15		280.0 +/- 1.0		SMM

\*\*\*\*\*

Structure being measured:

Top of Northern (Leading) Edge

\*\*\*\*\*

\*\*\*\*\*

OUTPUT:

\*\*\*\*\*

START TIME:

Event began at  $t = 0 + -0.117E+03 \pm 0.136E+02$  [minutes]

In more convenient units:

Event began at DOY 113 14: 3 +/- 0.136E+02 [minutes]

Origin defined at DOY113 16: 0

RADIAL INFORMATION:

RADIAL ACCELERATION =  $0.170E-01 \pm 0.436E-02$  km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) =  $0.243E+01 \pm 0.733E-01$  [solar radii]  
c(2) =  $0.174E-01 \pm 0.175E-02$  [radii/min]  
c(2) =  $0.202E+03 \pm 0.203E+02$  [km/sec]  
c(3) =  $0.439E-04 \pm 0.113E-04$  [radii/min\*\*2]  
c(3) =  $0.170E-01 \pm 0.436E-02$  [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) =  $0.51298E-01$  [radii] Bevington pg 154 (8-30)  
Exact error in c(1) =  $0.69197E-02$  [radii] Bevington pg 154 (8-28)  
Approximate error in c(2) =  $0.21787E-02$  [radii/min] Bevington pg 154 (8-30)  
Exact error in c(2) =  $0.53280E-03$  [radii/min] Bevington pg 154 (8-28)  
Approximate error in c(3) =  $0.16925E-04$  [radii/min\*\*] Bevington pg 154 (8-30)  
Exact error in c(3) =  $0.49025E-05$  [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) = 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 16: 3 = 0. km/sec

The TOTAL velocity at 16: 3 = 205. km/sec

The TANGENTIAL velocity at 17:28 = 0. km/sec

The TOTAL velocity at 17:28 = 292. km/sec

The TANGENTIAL velocity at 17:52 = 0. km/sec

The TOTAL velocity at 17:52 = 317. km/sec

The TANGENTIAL velocity at 18: 9 = 0. km/sec

The TOTAL velocity at 18: 9 = 334. km/sec

\*\*\*\*\*

The following info is for estimating goodness of the fit

\*\*\*\*\*

Fit is ok [ier=1]

Standard Deviation in the height = 1.28

Standard Deviation in start time measurement = 0.485E+02

Value of reduced Chi Squared returned from nllst2 = 0.105E-02

Reduced Chi Squared = 0.713E-02

Chi Squared = 0.713E-02

The probability for exceeding chi square = 0.974E+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 = 0.6575E+00

The correlation between the data and the time\*\*2 term = 0.7033E+00

The correlation between the data and the complete equation of motion = 0.1001E+01

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