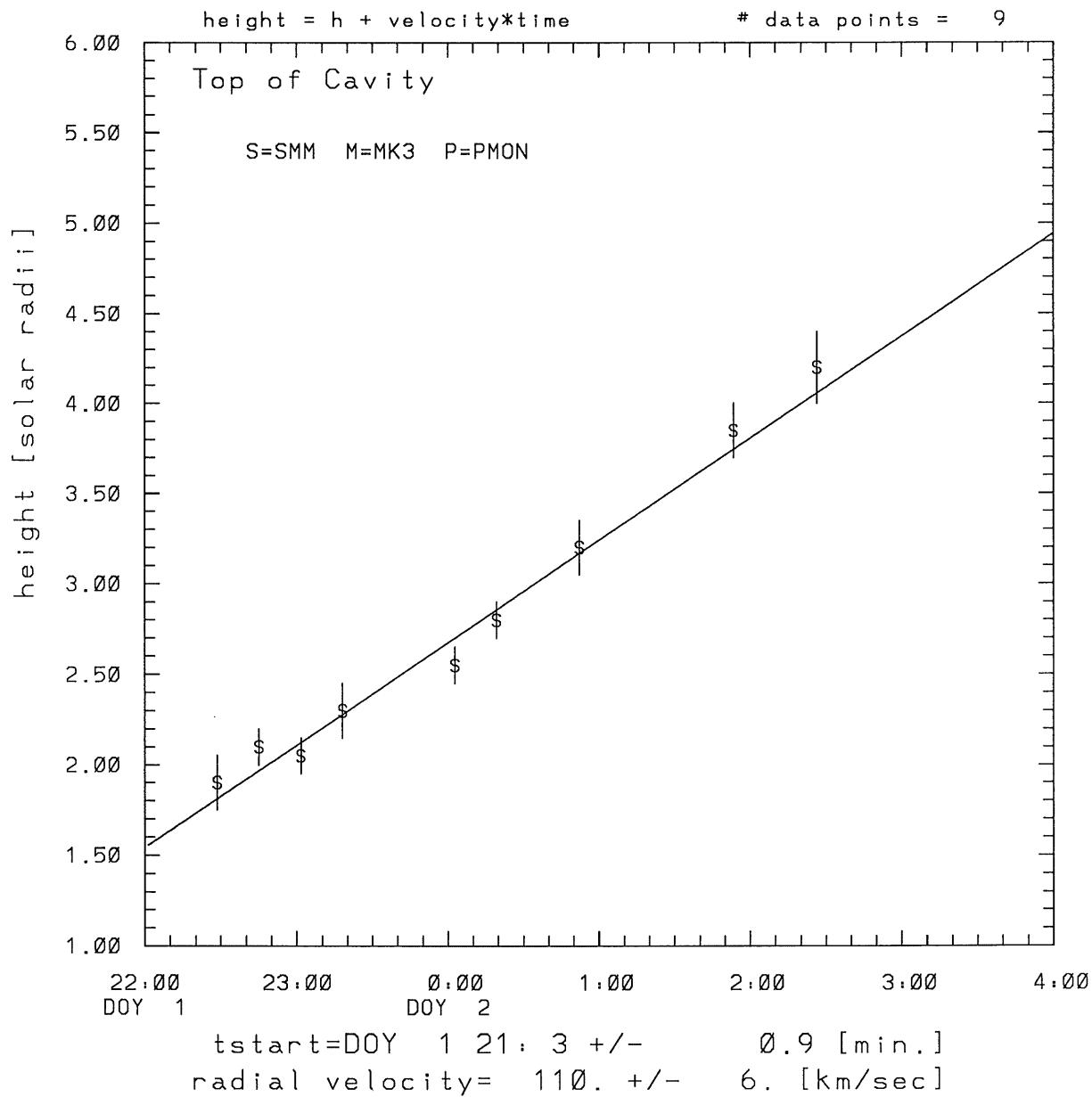
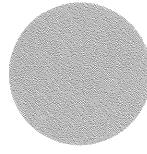
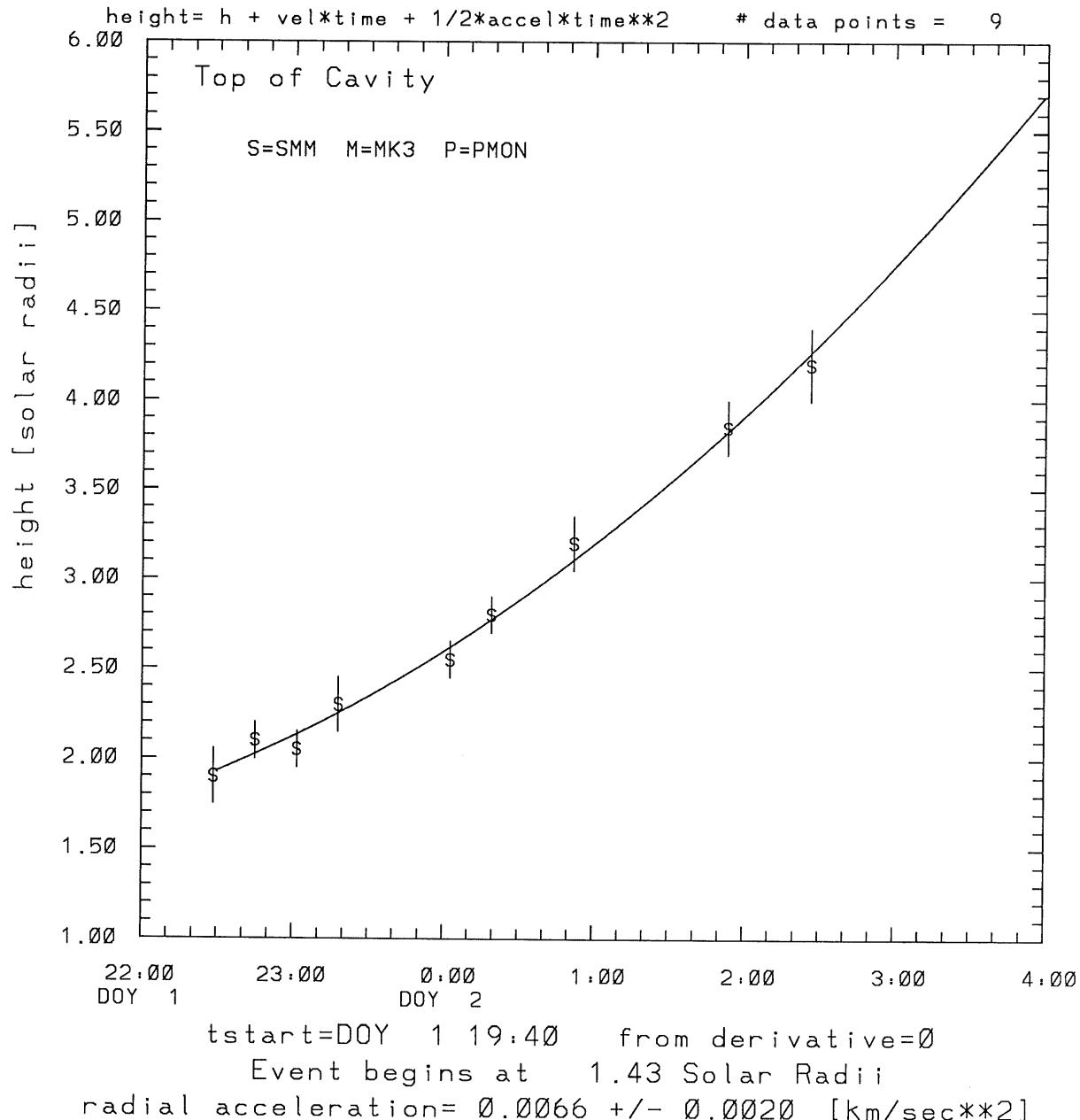


SMM C/P 1988 DOY 1 295 +/- 0 degrees



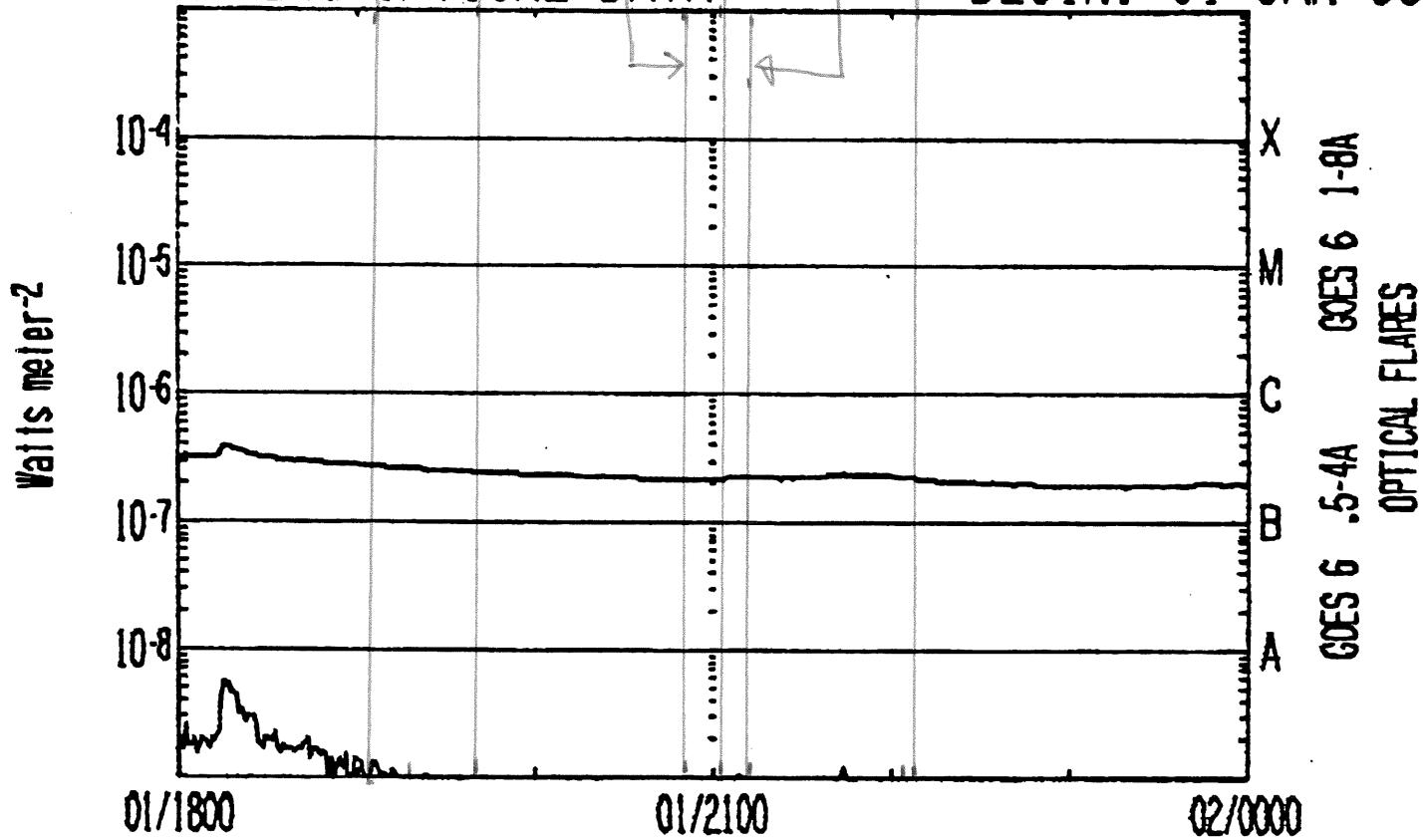


SMM C/P 1988 DOY 1 295 +/- 0 degrees



SMM XRAY and OPTICAL DATA

BEGIN: 01 JAN 88



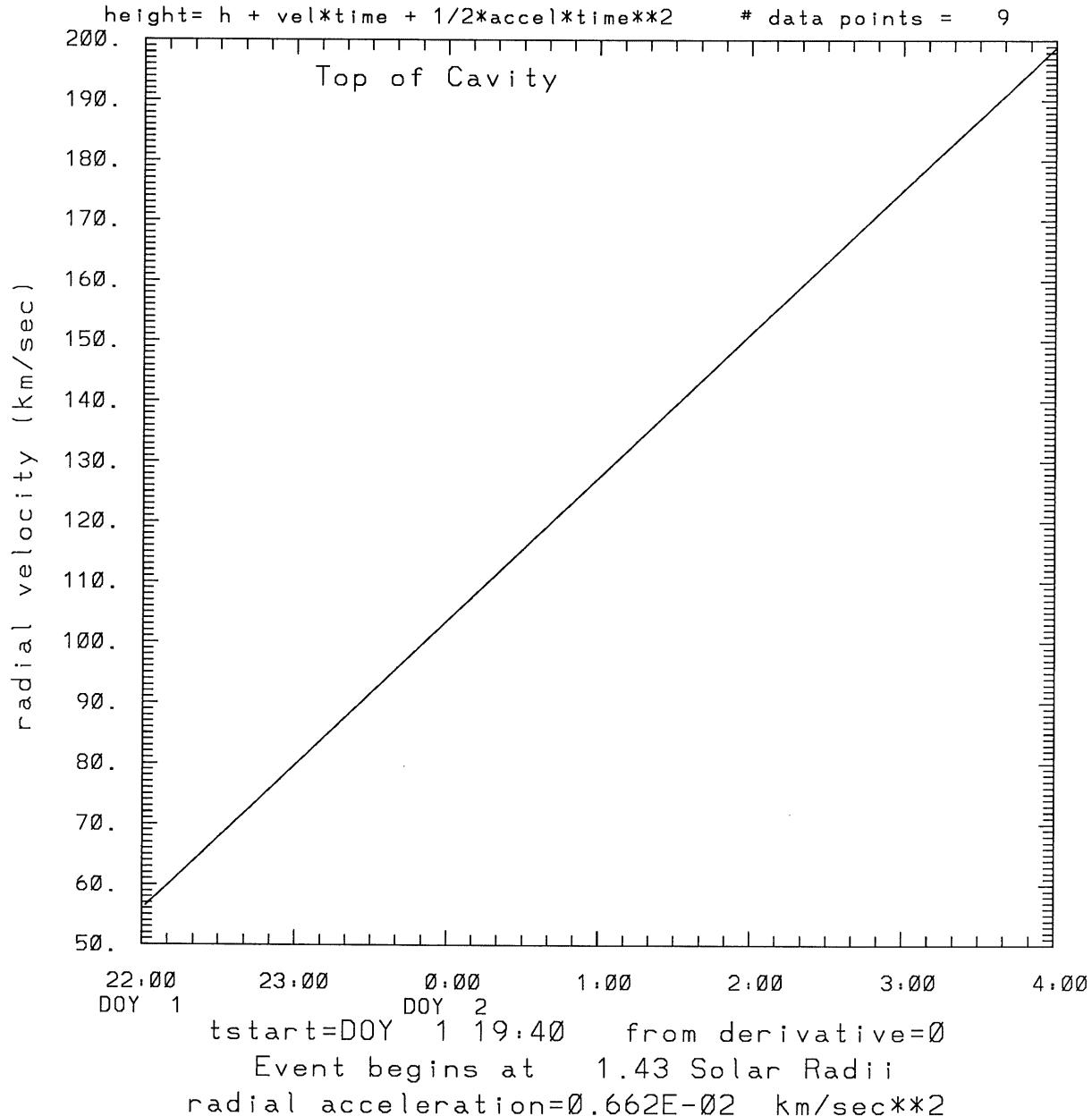
GOES-6 1 MIN DATA; OPTICAL FLARE DUR. IMP. REGION

RUN: 2231 UT
7 JAN 88

SAA's
NIGHT

GOES 6 5-4A GOES 6 1-8A
OPTICAL FLARES

SMM C/P 1988 DOY 1 295 +/- 0 degrees



This is a 1 order run

INPUT:

| year | doy | time | radii | radius | error in angle | error in angle | datatype |
|------|-----|----------|-------|----------|----------------|----------------|----------|
| 1988 | 1 | 22:28:33 | 1.90 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 1 | 22:45: 3 | 2.10 | +/- 0.10 | 295.0 | +/- 0.5 | SMM |
| 1988 | 1 | 23: 1:34 | 2.05 | +/- 0.10 | 295.0 | +/- 0.5 | SMM |
| 1988 | 1 | 23:18: 3 | 2.30 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 0: 2:44 | 2.55 | +/- 0.10 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 0:19:13 | 2.80 | +/- 0.10 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 0:52:14 | 3.20 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 1:53:24 | 3.85 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 2:26:24 | 4.20 | +/- 0.20 | 295.0 | +/- 0.5 | SMM |

Structure being measured:
Top of Cavity

OUTPUT:

(START TIME:

Event began at t = 0 + -0.573E+02 +/- 0.889E+00 [minutes]
In more convenient units:

Event began at DOY 1 21: 3 +/- 0.889E+00 [minutes]

Origin defined at DOY 1 22: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 110. +/- 6. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.154E+01 +/- 0.709E-01 [solar radii]
c(2) = 0.944E-02 +/- 0.555E-03 [radii/min]
c(2) = 0.110E+03 +/- 0.643E+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)= 0.71642E-01 [radii] see Bevington pg. 114
error in c(2)= 0.47788E-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) = 295. +/- 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 22:28 = 0. km/sec

The TOTAL velocity at 22:28 = 110. km/sec

The TANGENTIAL velocity at 22:45 = 0. km/sec

The TOTAL velocity at 22:45 = 110. km/sec

The TANGENTIAL velocity at 23: 1 = 0. km/sec

The TOTAL velocity at 23: 1 = 110. km/sec

The TANGENTIAL velocity at 23:18 = 0. km/sec

The TOTAL velocity at 23:18 = 110. km/sec

The TANGENTIAL velocity at 0: 2 = 0. km/sec

The TOTAL velocity at 0: 2 = 110. km/sec

The TANGENTIAL velocity at 0:19 = 0. km/sec

The TOTAL velocity at 0:19 = 110. km/sec

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

The TOTAL velocity at 0:52 = 110. km/sec

The TANGENTIAL velocity at 1:53 = 0. km/sec

The TOTAL velocity at 1:53 = 110. km/sec

The TANGENTIAL velocity at 2:26 = 0. km/sec

The TOTAL velocity at 2:26 = 110. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 0.82

Standard Deviation in start time measurement = 0.789E+02

Error in time = 0.31697E+02 using best fit method

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

Value of reduced Chi Squared returned from nllst2 = 0.117E-01

Reduced Chi Squared = 0.674E-01

Chi Squared = 0.472E+00

The probability for exceeding chi square = 0.100E+01

The correlation coefficient = 0.993E+00

The probability that no LINEAR correlation exists between the variables = 0.1074E-06

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

This is a 2 order run

INPUT:

| year | doy | time | radii | radius | error in radii | angle | error in angle | datatype |
|------|-----|----------|-------|----------|-------------------|---------|-------------------|----------|
| 1988 | 1 | 22:28:33 | 1.90 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 1 | 22:45: 3 | 2.10 | +/- 0.10 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 1 | 23: 1:34 | 2.05 | +/- 0.10 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 1 | 23:18: 3 | 2.30 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 0: 2:44 | 2.55 | +/- 0.10 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 0:19:13 | 2.80 | +/- 0.10 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 0:52:14 | 3.20 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 1:53:24 | 3.85 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 2:26:24 | 4.20 | +/- 0.20 | 295.0 | +/- 0.5 | SMM | |

Structure being measured:

Top of Cavity

OUTPUT:

(
START TIME:

tstart=DOY 1 19:40 from derivative = 0

Event begins at 1.43 Solar Radii

Origin defined at DOY 1 22: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.662E-02 +/- 0.202E-02 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.177E+01 +/- 0.844E-01 [solar radii]
c(2) = 0.482E-02 +/- 0.146E-02 [radii/min]
c(2) = 0.559E+02 +/- 0.169E+02 [km/sec]
c(3) = 0.171E-04 +/- 0.521E-05 [radii/min**2]
c(3) = 0.662E-02 +/- 0.202E-02 [km/sec**2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.85934E-01 [radii] Bevington pg 154 (8-30)

Exact error in c(1) = 0.13886E-01 [radii] Bevington pg 154 (8-28)

Approximate error in c(2) = 0.14502E-02 [radii/min] Bevington pg 154 (8-30)

Exact error in c(2) = 0.27934E-03 [radii/min] Bevington pg 154 (8-28)

Approximate error in c(3) = 0.48571E-05 [radii/min**] Bevington pg 154 (8-30)
Exact error in c(3) = 0.10206E-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) = 295. +/- 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 22:28 = 0. km/sec
The TOTAL velocity at 22:28 = 67. km/sec

The TANGENTIAL velocity at 22:45 = 0. km/sec
The TOTAL velocity at 22:45 = 74. km/sec

The TANGENTIAL velocity at 23: 1 = 0. km/sec
The TOTAL velocity at 23: 1 = 80. km/sec

The TANGENTIAL velocity at 23:18 = 0. km/sec
The TOTAL velocity at 23:18 = 87. km/sec

The TANGENTIAL velocity at 0: 2 = 0. km/sec
The TOTAL velocity at 0: 2 = 105. km/sec

The TANGENTIAL velocity at 0:19 = 0. km/sec
The TOTAL velocity at 0:19 = 111. km/sec

The TANGENTIAL velocity at 0:52 = 0. km/sec
The TOTAL velocity at 0:52 = 124. km/sec

The TANGENTIAL velocity at 1:53 = 0. km/sec
The TOTAL velocity at 1:53 = 149. km/sec

The TANGENTIAL velocity at 2:26 = 0. km/sec
The TOTAL velocity at 2:26 = 162. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 0.82
Standard Deviation in start time measurement = 0.789E+02

Value of reduced Chi Squared returned from nllst2 = 0.529E-02
Reduced Chi Squared = 0.295E-01
Chi Squared = 0.177E+00
The probability for exceeding chi square = 0.100E+01

For a second order fit 3 correlation coefficients are given:

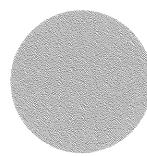
(Using equation of motion: $r = a + bt + at^{**2}$)

The correlation between the data and the term linear in time = 0.8436E+00

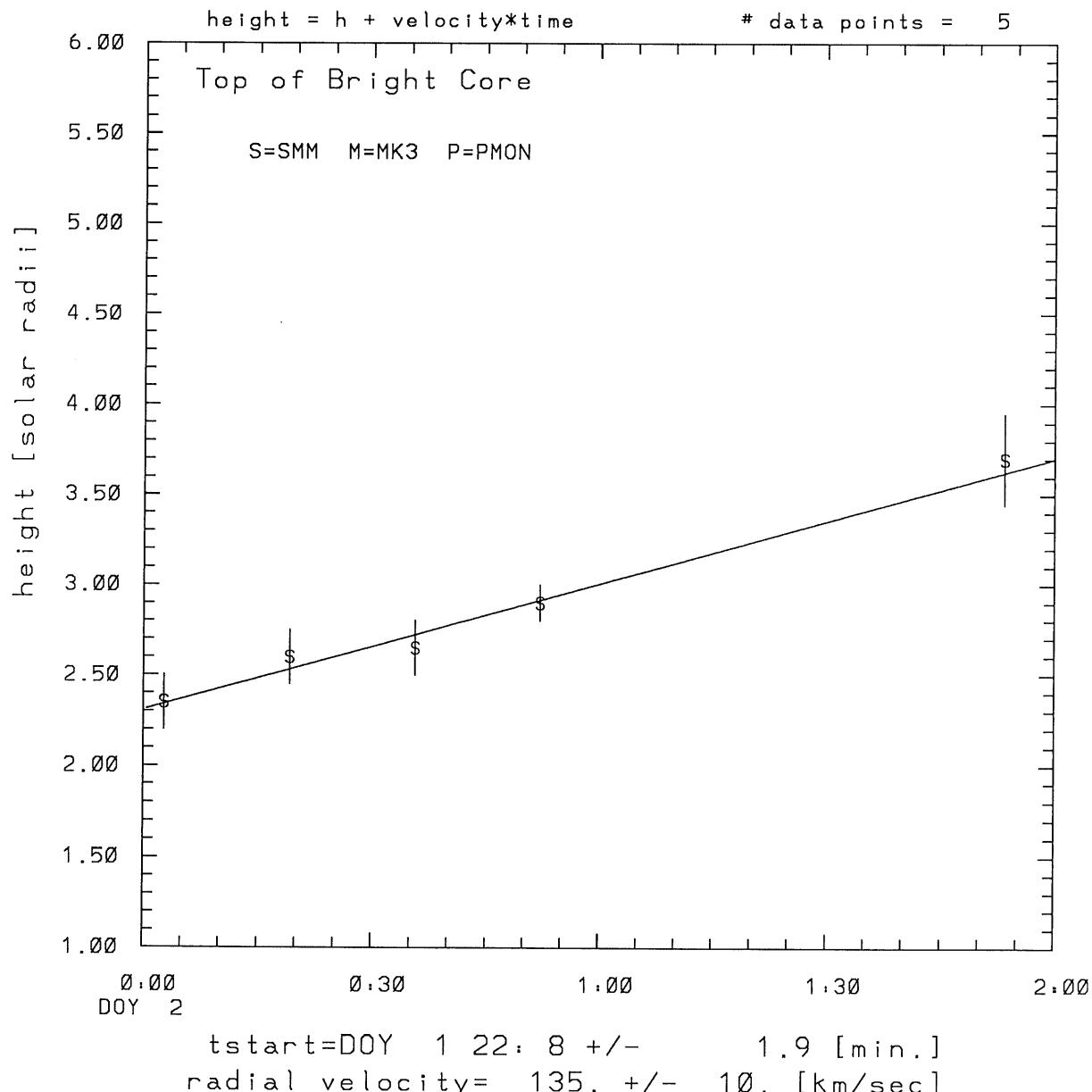
The correlation between the data and the time **2 term = 0.8051E+00

The correlation between the data and the complete equation of motion = 0.9890E+00

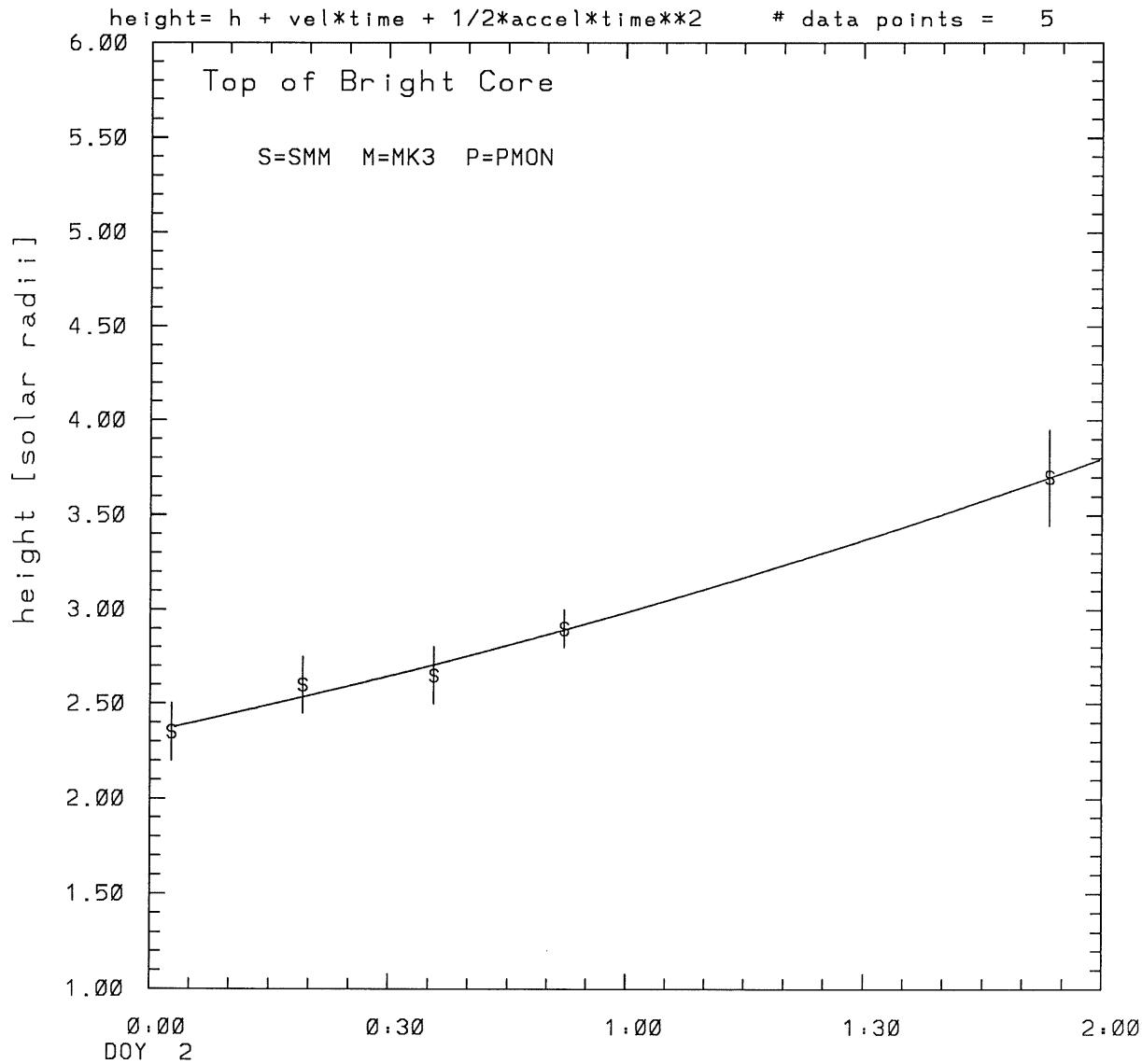
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]



SMM C/P 1988 DOY 2 295 +/- 0 degrees

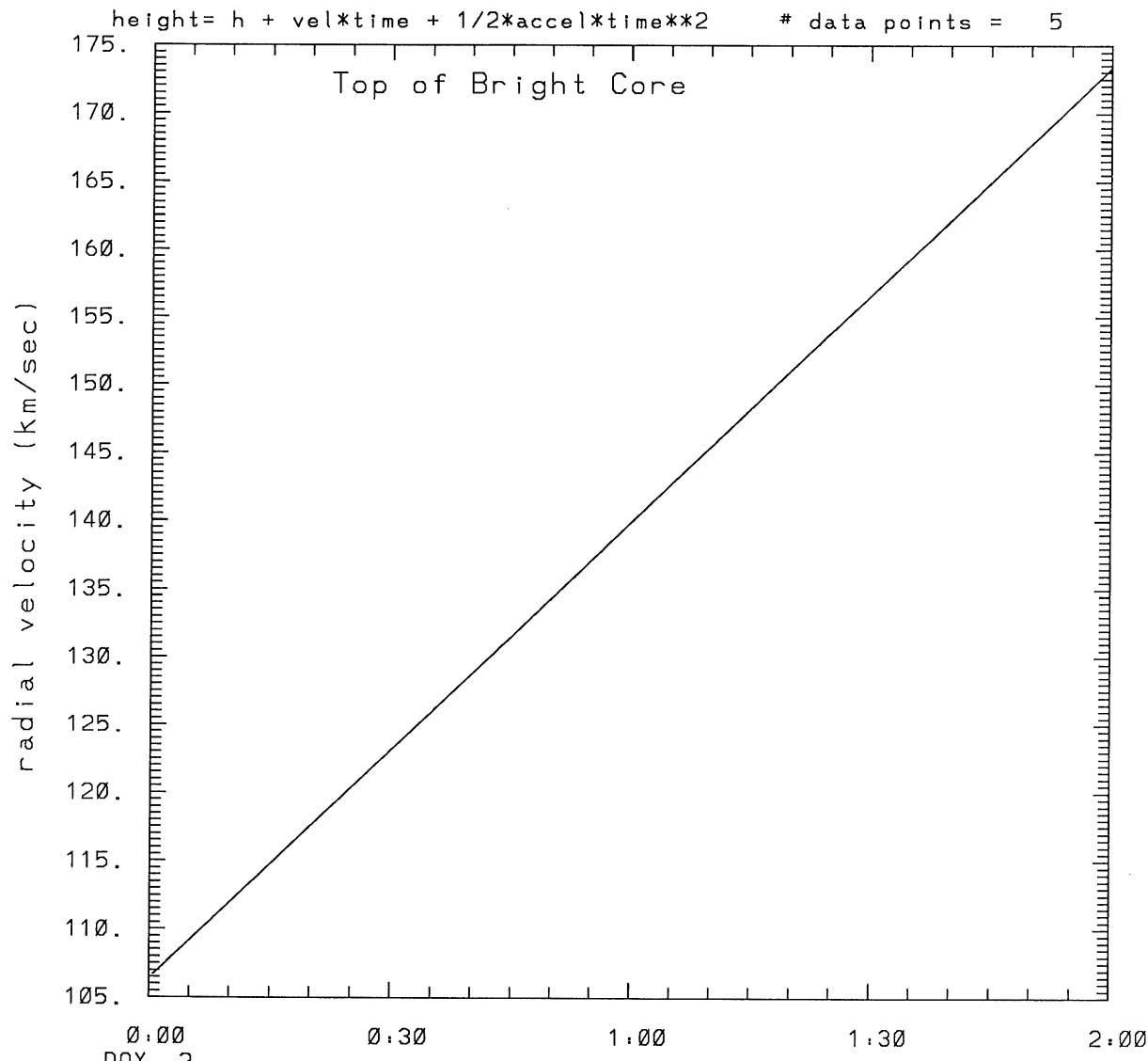


SMM C/P 1988 DOY 2 295 +/- 0 degrees



tstart=DOY 1 20:50 from derivative=0
Event begins at 1.47 Solar Radii
radial acceleration= 0.0093 +/- 0.0074 [km/sec**2]

SMM C/P 1988 DOY 2 295 +/- 0 degrees



tstart=DOY 1 20:50 from derivative=0
Event begins at 1.47 Solar Radii
radial acceleration=0.929E-02 km/sec**2

This is a 1 order run

INPUT:

| year | doy | time | radii | radius | error in radii | angle | error in angle | datatype |
|------|-----|---------|-------|----------|----------------|---------|----------------|----------|
| 1988 | 2 | 0: 2:44 | 2.35 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 0:19:13 | 2.60 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 0:35:44 | 2.65 | +/- 0.15 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 0:52:14 | 2.90 | +/- 0.10 | 295.0 | +/- 0.5 | SMM | |
| 1988 | 2 | 1:53:24 | 3.70 | +/- 0.25 | 295.0 | +/- 0.5 | SMM | |

Structure being measured:

Top of Bright Core

OUTPUT:

START TIME:

Event began at t = 0 + -0.112E+03 +/- 0.191E+01 [minutes]

In more convenient units:

Event began at DOY 1 22: 8 +/- 0.191E+01 [minutes]

Origin defined at DOY 2 0: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 135. +/- 10. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.231E+01 +/- 0.414E-01 [solar radii]

c(2) = 0.116E-01 +/- 0.879E-03 [radii/min]

c(2) = 0.135E+03 +/- 0.102E+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)= 0.50081E-01 [radii] see Bevington pg. 114

error in c(2)= 0.85284E-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) = 295. +/- 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 0: 2 = 0. km/sec

The TOTAL velocity at 0: 2 = 135. km/sec

The TANGENTIAL velocity at 0:19 = 0. km/sec

The TOTAL velocity at 0:19 = 135. km/sec

The TANGENTIAL velocity at 0:35 = 0. km/sec

The TOTAL velocity at 0:35 = 135. km/sec

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

The TOTAL velocity at 0:52 = 135. km/sec

The TANGENTIAL velocity at 1:53 = 0. km/sec

The TOTAL velocity at 1:53 = 135. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 0.52

Standard Deviation in start time measurement = 0.381E+02

Error in time = 0.10825E+02 using best fit method

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

Value of reduced Chi Squared returned from nllst2 = 0.282E-02

Reduced Chi Squared = 0.179E-01

Chi Squared = 0.536E-01

The probability for exceeding chi square = 0.100E+01

The correlation coefficient = 0.994E+00

The probability that no LINEAR correlation exists between the variables = 0.5928E-03

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

This is a 2 order run

INPUT:

| year | doy | time | radii | radius | angle | angle | datatype |
|------|-----|---------|-------|----------|-------|---------|----------|
| 1988 | 2 | 0: 2:44 | 2.35 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 0:19:13 | 2.60 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 0:35:44 | 2.65 | +/- 0.15 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 0:52:14 | 2.90 | +/- 0.10 | 295.0 | +/- 0.5 | SMM |
| 1988 | 2 | 1:53:24 | 3.70 | +/- 0.25 | 295.0 | +/- 0.5 | SMM |

Structure being measured:

Top of Bright Core

OUTPUT:

START TIME:

tstart=DOY 1 20:50 from derivative = 0

Event begins at 1.47 Solar Radii

Origin defined at DOY 2 0: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.929E-02 +/- 0.741E-02 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.235E+01 +/- 0.509E-01 [solar radii]
c(2) = 0.917E-02 +/- 0.213E-02 [radii/min]
c(2) = 0.106E+03 +/- 0.247E+02 [km/sec]
c(3) = 0.240E-04 +/- 0.192E-04 [radii/min**2]
c(3) = 0.929E-02 +/- 0.741E-02 [km/sec**2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.63725E-01 [radii] Bevington pg 154 (8-30)

Exact error in c(1) = 0.17968E-01 [radii] Bevington pg 154 (8-28)

Approximate error in c(2) = 0.29110E-02 [radii/min] Bevington pg 154 (8-30)

Exact error in c(2) = 0.53505E-03 [radii/min] Bevington pg 154 (8-28)

Approximate error in c(3) = 0.23129E-04 [radii/min**2] Bevington pg 154 (8-30)

Exact error in c(3) = 0.34181E-05 [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) = 295. +/- 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 0: 2 = 0. km/sec

The TOTAL velocity at 0: 2 = 108. km/sec

The TANGENTIAL velocity at 0:19 = 0. km/sec

The TOTAL velocity at 0:19 = 117. km/sec

The TANGENTIAL velocity at 0:35 = 0. km/sec

The TOTAL velocity at 0:35 = 126. km/sec

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

The TOTAL velocity at 0:52 = 136. km/sec

The TANGENTIAL velocity at 1:53 = 0. km/sec

The TOTAL velocity at 1:53 = 170. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 0.52

Standard Deviation in start time measurement = 0.381E+02

Value of reduced Chi Squared returned from nllst2 = 0.247E-02

Reduced Chi Squared = 0.966E-02

Chi Squared = 0.193E-01

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 = 0.7193E+00

The correlation between the data and the t^{**2} term = 0.6379E+00

The correlation between the data and the complete equation of motion = 0.9874E+00

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