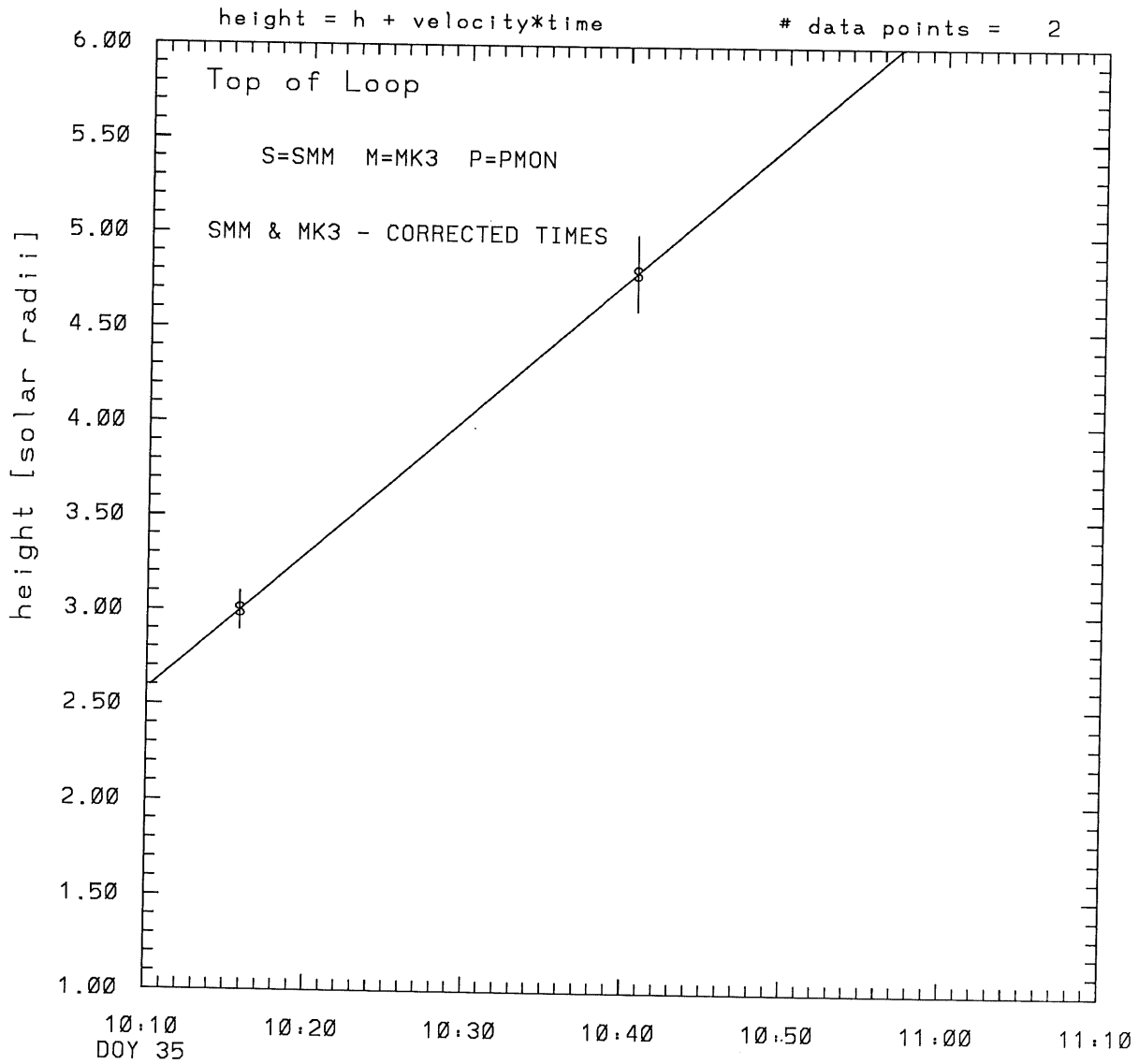


SMM C/P 1989 DOY 35 52 +/- 0 degrees



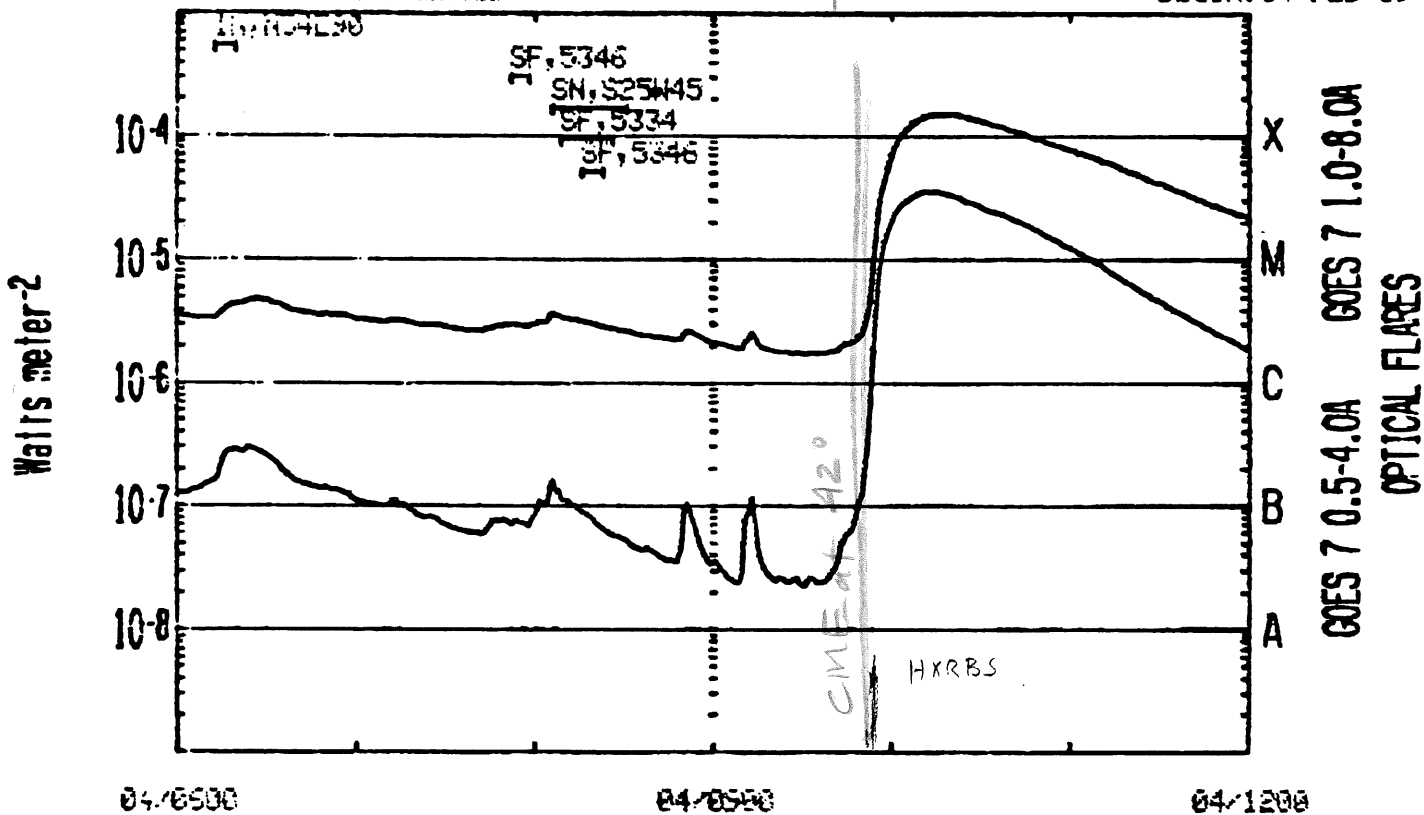
tstart=DOY 35 9:50 +/- 0.0 [min.]  
radial velocity= 842. +/- 0. [km/sec]

XRAY and OPTICAL DATA TOGETHER

STOP  
Pet.

*Top of Loop  
[9:50] 1st order only*

BEGIN: 04 FEB 89



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

SAA's  
NIGHT

RUN: 1729UT  
11 FEB 89



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

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

year	day	time	radii	error in radius	angle	error in angle	datatype
1989	35	10:15:47	3.00	+/- 0.10	52.0	+/- 0.5	SMM
1989	35	10:40:35	4.80	+/- 0.20	52.0	+/- 0.5	SMM

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

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

START TIME:

Event began at  $t = 0 + -0.218E+02 +/- 0.000E+00$  [minutes]  
In more convenient units:  
Event began at DOY 35 9:50 +/- 0.000E+00 [minutes]

Origin defined at DOY 35 10:10

RADIAL INFORMATION:

RADIAL VELOCITY = 842. +/- 0. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1) = 0.258E+01 +/- 0.249E-06$  [solar radii]  
 $c(2) = 0.726E-01 +/- 0.170E-07$  [radii/min]  
 $c(2) = 0.842E+03 +/- 0.197E-03$  [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:

$a(1) = 52. +/- 0.$  [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 10:15 = 0. km/sec

The TOTAL velocity at 10:15 = 842. km/sec

The TANGENTIAL velocity at 10:40 = 0. km/sec

The TOTAL velocity at 10:40 = 842. km/sec

\*\*\*\*\*

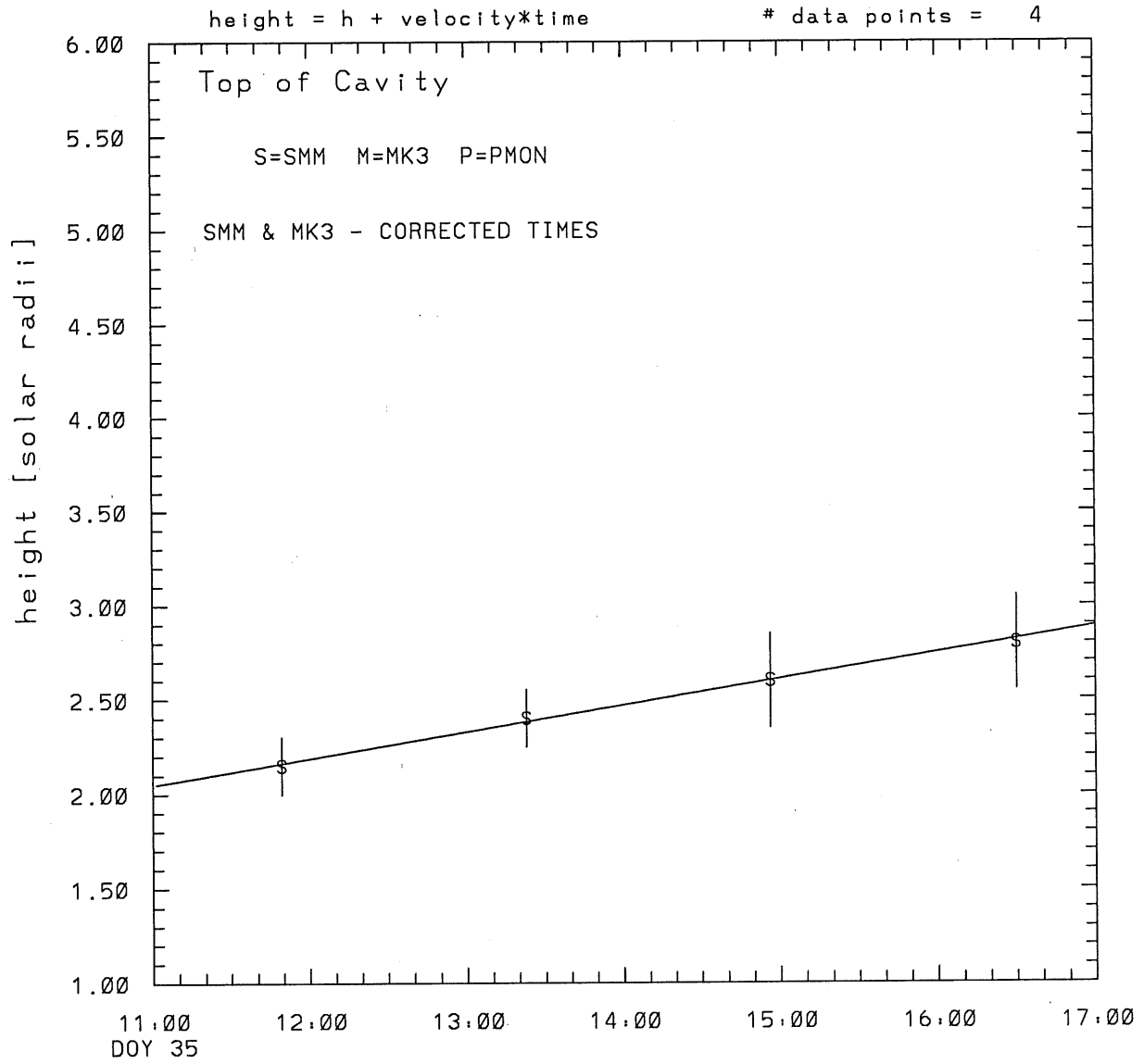
The following info is for estimating goodness of the fit

\*\*\*\*\*

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

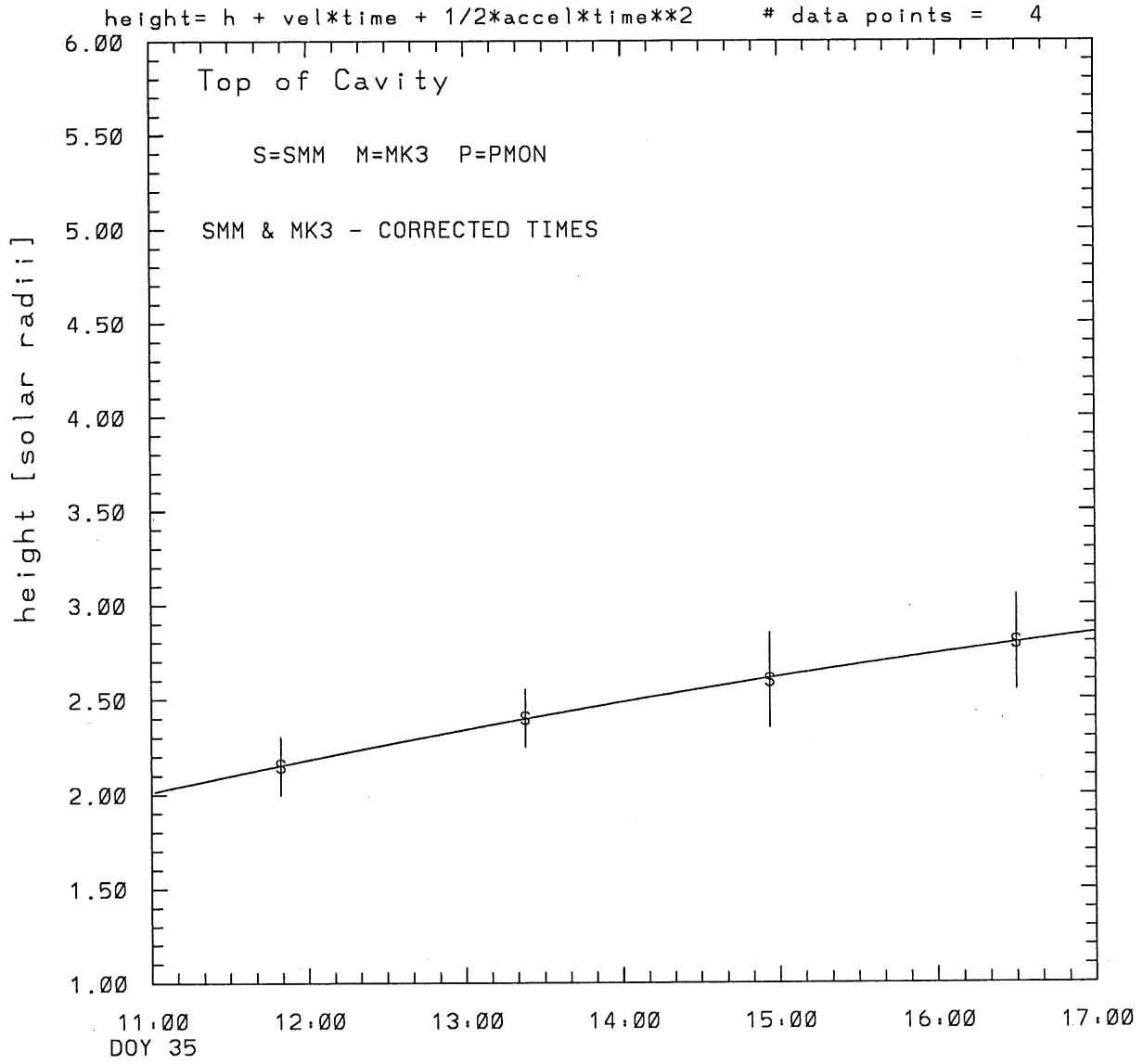
Correlation coefficient is not computable!

SMM C/P 1989 DOY 35 62 +/- 0 degrees



tstart=DOY 35 3:33 +/- 8.6 [min.]  
radial velocity= 27. +/- 1. [km/sec]

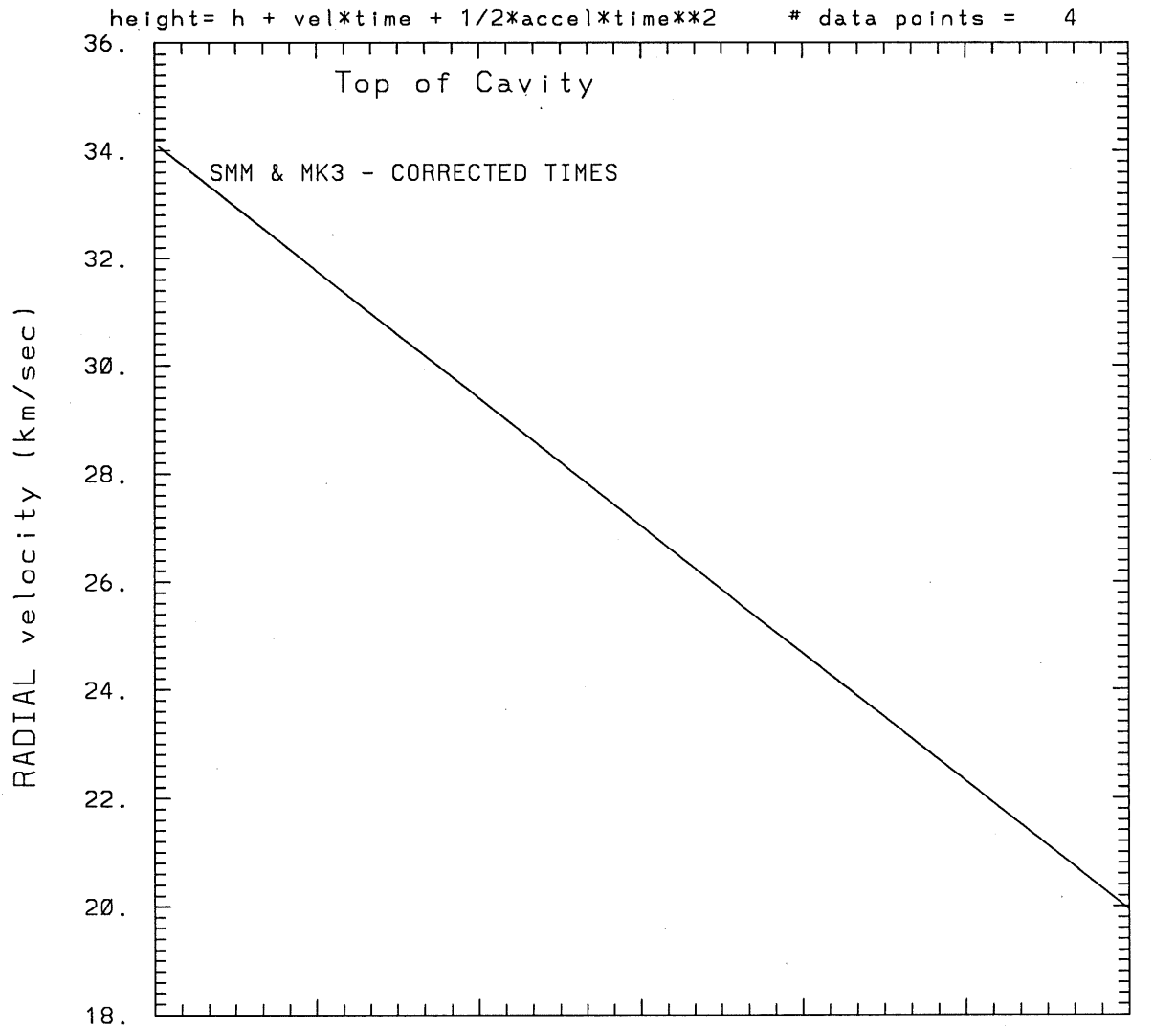
SMM C/P 1989 DOY 35 62 +/- 0 degrees



tstart=DOY 35 6: 8 +/- 41.5 [min.]

radial acceleration =  $-0.0007 \pm 0.0002$  [km/sec\*\*2]

SMM C/P 1989 DOY 35 62 +/- 0 degrees



11:00  
DOY 35

tstart=DOY 35 6.8 +/- 41.5 [min.]

radial acceleration=-.657E-03 km/sec\*\*2



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

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

year	doy	time	radii	radius	error in angle	error in angle	datatype
1989	35	11:49:16	2.15 +/-	0.15	62.0 +/-	0.5	SMM
1989	35	13:22:46	2.40 +/-	0.15	62.0 +/-	0.5	SMM
1989	35	14:56:22	2.60 +/-	0.25	62.0 +/-	0.5	SMM
1989	35	16:29:52	2.80 +/-	0.25	62.0 +/-	0.5	SMM

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

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

START TIME:

Event began at t = 0 + -0.449E+03 +/- 0.859E+01 [minutes]  
In more convenient units:  
Event began at DOY 35 3:33 +/- 0.859E+01 [minutes]

Origin defined at DOY 35 11: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 27. +/- 1. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.205E+01 +/- 0.162E-01 [solar radii]  
c(2) = 0.233E-02 +/- 0.931E-04 [radii/min]  
c(2) = 0.271E+02 +/- 0.108E+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)= 0.21229E-01 [radii] see Bevington pg. 114  
error in c(2)= 0.98055E-04 [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) = 62. +/- 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 11:49 = 27. km/sec

The RADIAL velocity at 13:22 = 27. km/sec

The RADIAL velocity at 14:56 = 27. km/sec

The RADIAL velocity at 16:29 = 27. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.28  
Standard Deviation in start time measurement = 0.105E+03  
Error in time = 0.12423E+02 using best fit method  
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.312E-03  
Reduced Chi Squared = 0.108E-02  
Chi Squared = 0.216E-02  
The probability for exceeding chi square = 0.100E+01

The correlation coefficient = 0.998E+00  
The probability that no LINEAR correlation exists between the variables = 0.1625]  
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

\*\*\*\*\*  
This is a 2 order run  
\*\*\*\*\*

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

year	day	time	radii	radius	error in angle	error in angle	datatype
1989	35	11:49:16	2.15 +/-	0.15	62.0 +/-	0.5	SMM
1989	35	13:22:46	2.40 +/-	0.15	62.0 +/-	0.5	SMM
1989	35	14:56:22	2.60 +/-	0.25	62.0 +/-	0.5	SMM
1989	35	16:29:52	2.80 +/-	0.25	62.0 +/-	0.5	SMM

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

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

START TIME:

Event began at t = 0 + -0.294E+03 +/- 0.415E+02 [minutes]  
In more convenient units:  
Event began at DOY 35 6: 8 +/- 0.415E+02 [minutes]

Origin defined at DOY 35 11: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = -0.657E-03 +/- 0.160E-03 km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.201E+01 +/- 0.111E-01 [solar radii]  
c(2) = 0.294E-02 +/- 0.153E-03 [radii/min]  
c(2) = 0.341E+02 +/- 0.177E+01 [km/sec]  
c(3) = -0.170E-05 +/- 0.414E-06 [radii/min\*\*2]  
c(3) = -0.657E-03 +/- 0.160E-03 [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.21988E-01 [radii] Bevington pg 154 (8-30)  
Exact error in c(1) = 0.42828E-02 [radii] Bevington pg 154 (8-28)  
Approximate error in c(2) = 0.27656E-03 [radii/min] Bevington pg 154 (8-30)  
Exact error in c(2) = 0.86720E-04 [radii/min] Bevington pg 154 (8-28)  
Approximate error in c(3) = 0.71233E-06 [radii/min\*\*2] Bevington pg 154 (8-30)  
Exact error in c(3) = 0.23485E-06 [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) = 62. +/- 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 11:49 = 32. km/sec

The RADIAL velocity at 13:22 = 29. km/sec

The RADIAL velocity at 14:56 = 25. km/sec

The RADIAL velocity at 16:29 = 21. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.28

Standard Deviation in start time measurement = 0.105E+03

Value of reduced Chi Squared returned from nllst2 = 0.496E-04

Reduced Chi Squared = 0.460E-03

Chi Squared = 0.460E-03

The probability for exceeding chi square = 0.994E+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 = 0.9980E+00

The correlation between the data and the time\*\*2 term = 0.9166E+00

The correlation between the data and the complete equation of motion=0.1002E+01

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