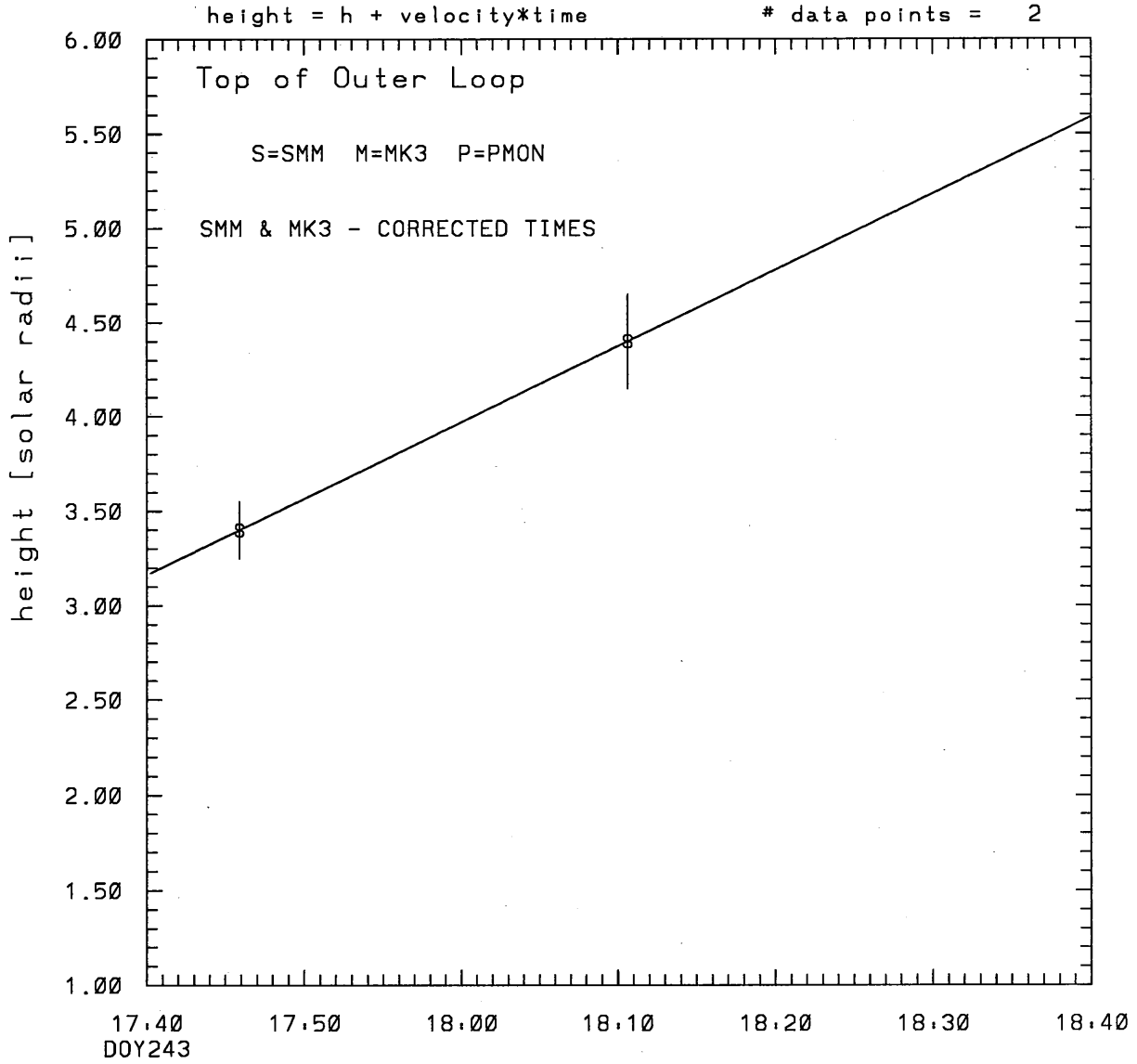


SMM C/P 1989 DOY243 117 +/- 0 degrees



tstart=DOY243 16:48 +/- 0.0 [min.]
radial velocity= 469. +/- 0. [km/sec]

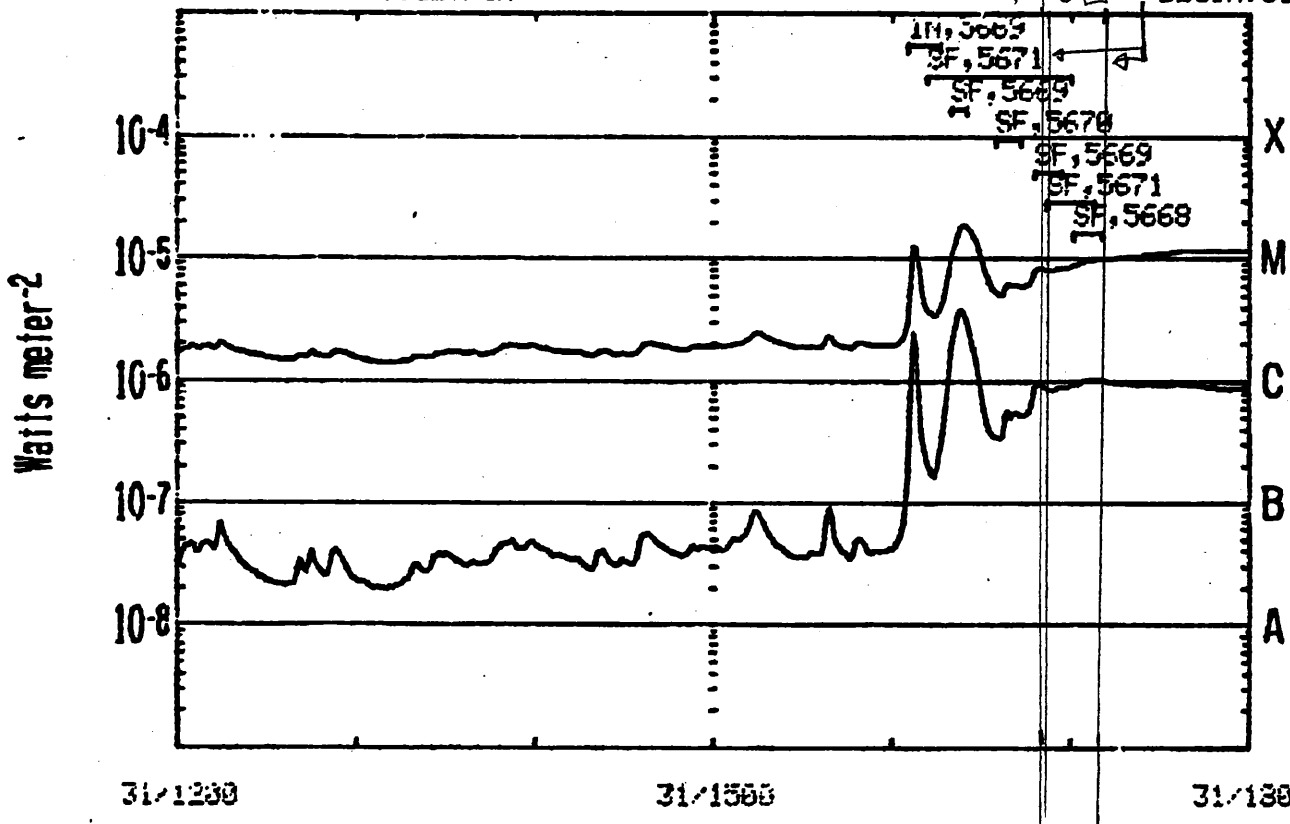
1989 Day 243

VIEW and OPTICAL DATA TOGETHER

STOP Ret.,

Top of Outer Loop
Center = 125
[16:51], 1st order only
Top of Inner Loop
Center = 126
[17:09] 1st order
[16:53], 2nd order

BEGIN: 31 AUG 89



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

SAA's
NIGHT

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

RUN: 1857UT
5 SEP 89

This is a 1 order run

INPUT:

year	doy	time	radii	radius	error in angle	error in angle	datatype
1989	243	17:45:53	3.40 +/-	0.15	117.0 +/-	1.0	SMM
1989	243	18:10:38	4.40 +/-	0.25	117.0 +/-	1.0	SMM

Structure being measured:
Top of Outer Loop

OUTPUT:

START TIME:

Event began at t = 0 + -0.535E+02 +/- 0.000E+00 [minutes]
In more convenient units:
Event began at DOY 243 16:48 +/- 0.000E+00 [minutes]

Origin defined at DOY243 17:40

RADIAL INFORMATION:

RADIAL VELOCITY = 469. +/- 0. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.316E+01 +/- 0.145E-05 [solar radii]
c(2) = 0.404E-01 +/- 0.873E-07 [radii/min]
c(2) = 0.469E+03 +/- 0.101E-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]

ANGULAR INFORMATION:

ANGULAR VELOCITY = 0.0000E+00 +/- 0.0000E+00[radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 117. +/- 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, RADIAL AND TOTAL SPEEDS AT EACH DATA POINT ARE:

The TANGENTIAL velocity at 17:45 = 0. km /sec
The RADIAL velocity at 17:45 = 469. km/sec

The TOTAL velocity at 17:45 = 469. km/sec

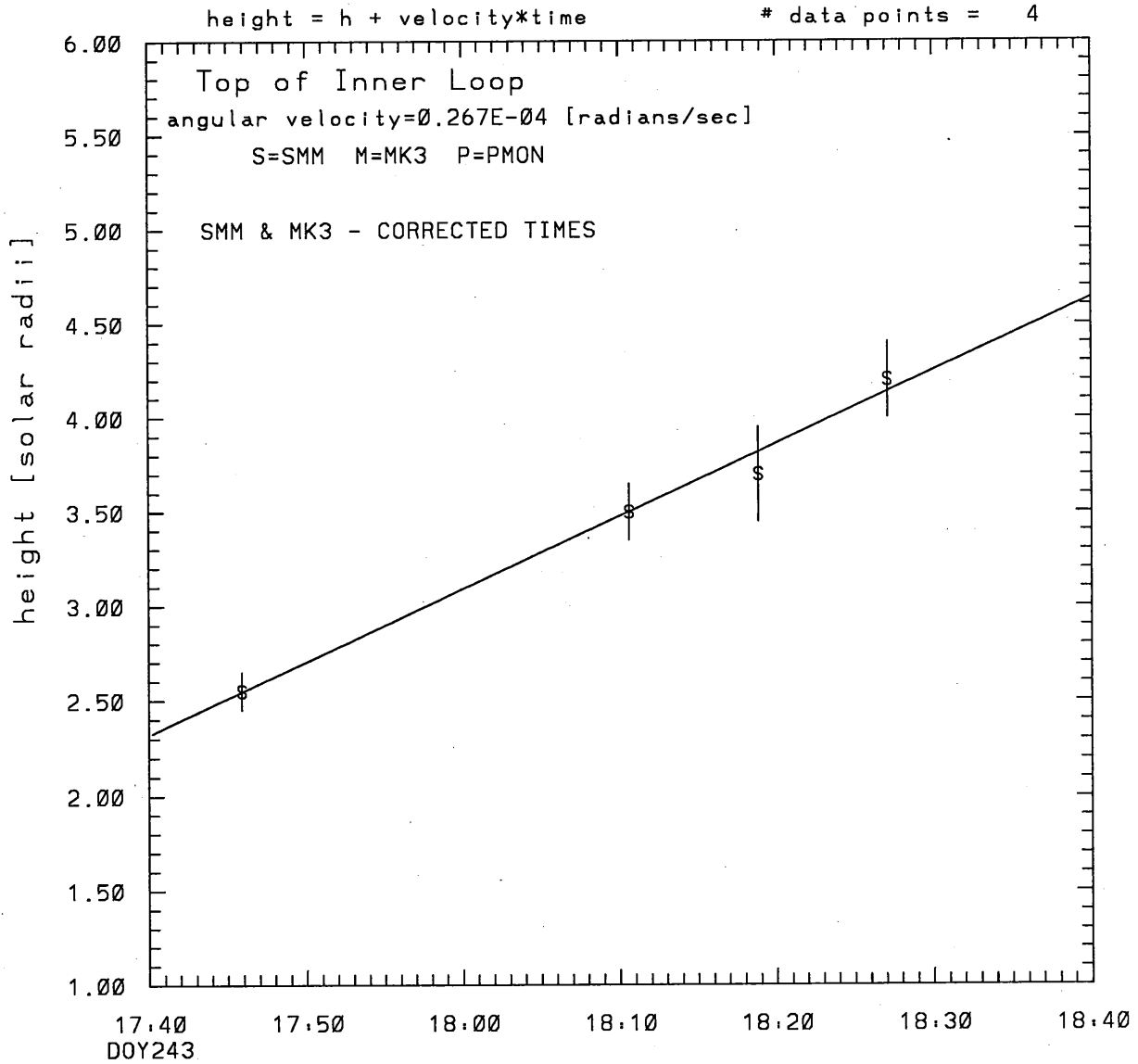
The TANGENTIAL velocity at 18:10 = 0. km /sec
The RADIAL velocity at 18:10 = 469. km/sec

The TOTAL velocity at 18:10 = 469. 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!

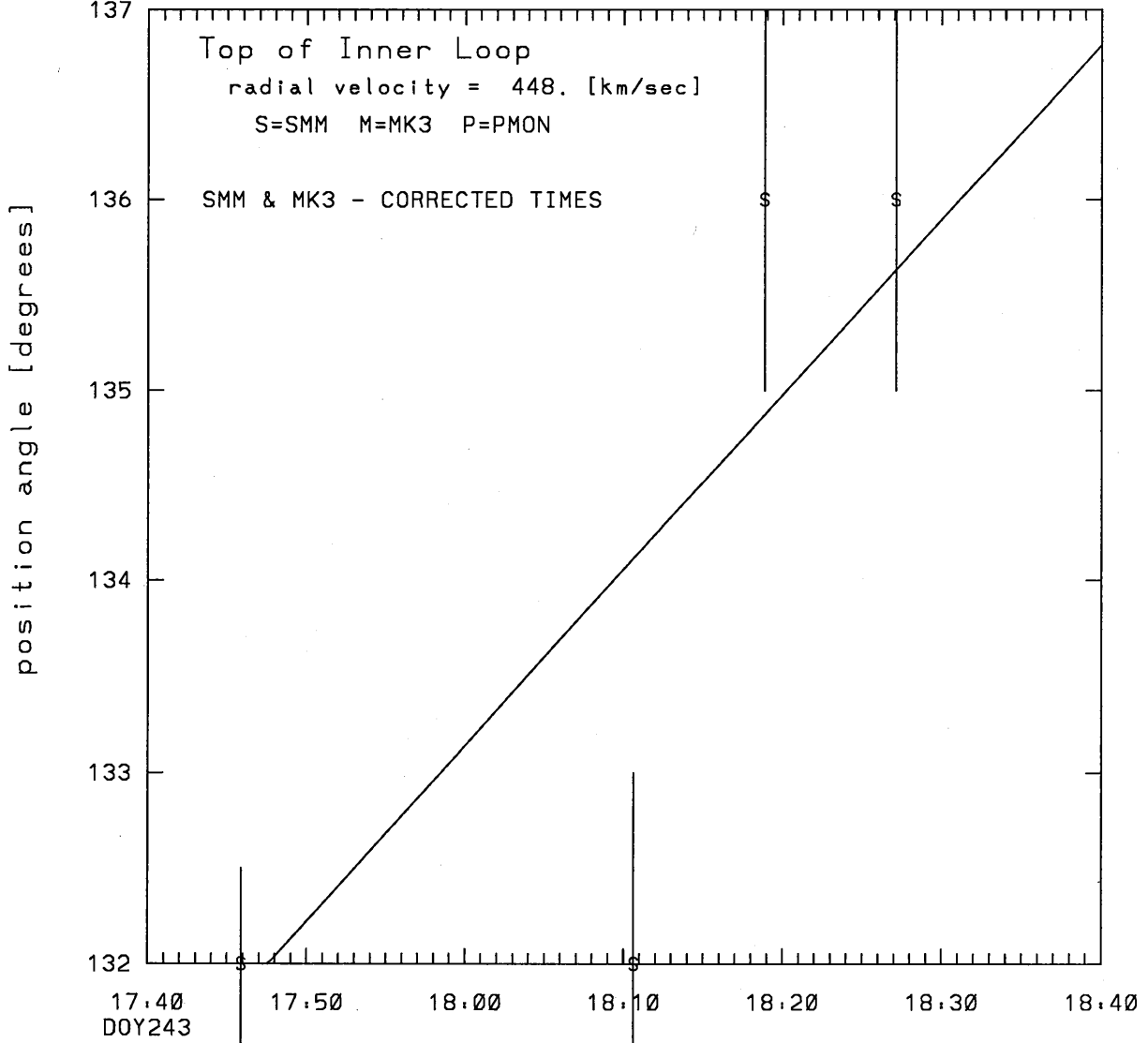
SMM C/P 1989 DOY243 134 +/- 2 degrees



tstart=DOY243 17: 6 +/- 0.1 [min.]
radial velocity= 448. +/- 17. [km/sec]

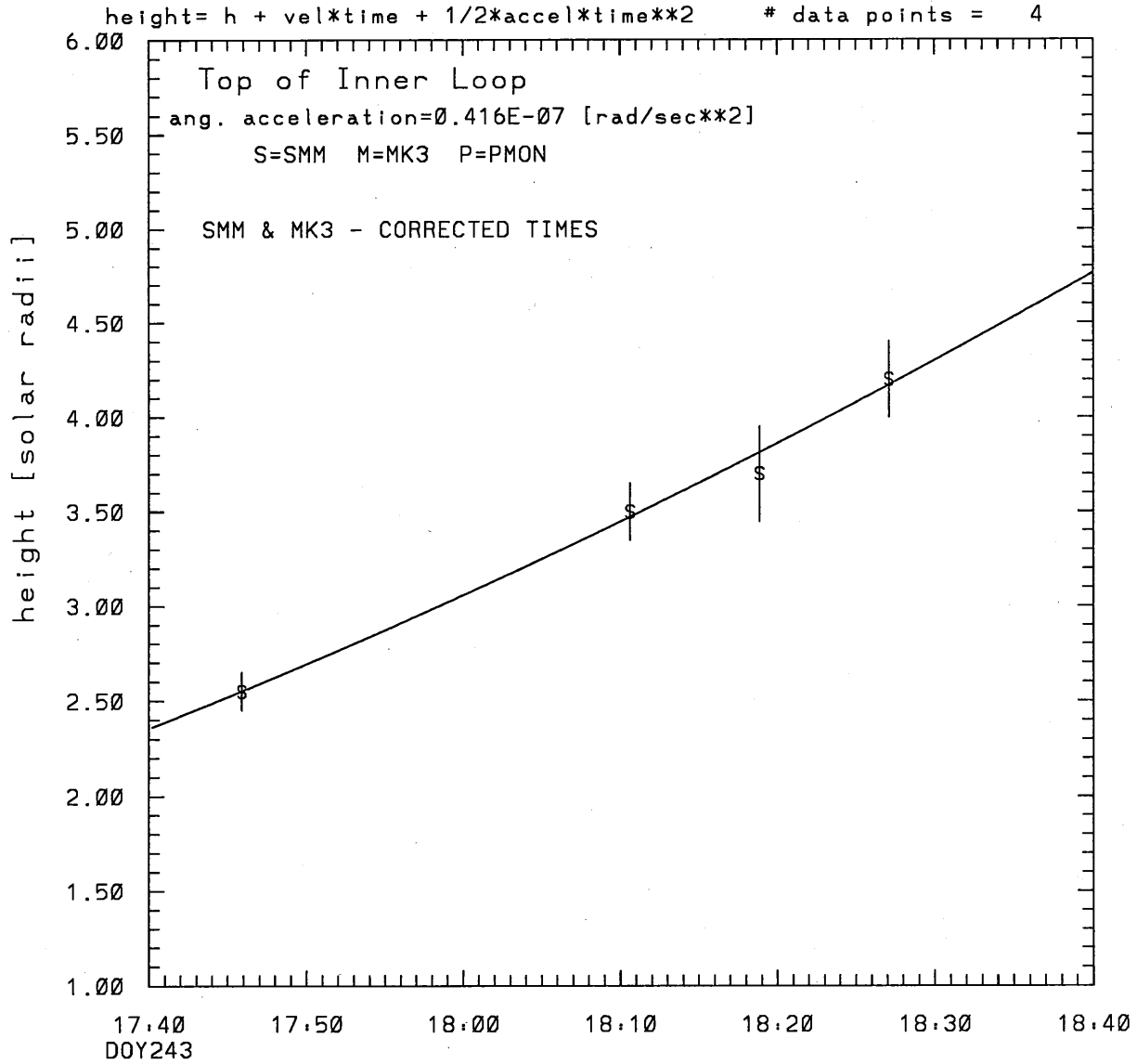
SMM C/P 1989 DOY243 134 +/- 2 degrees

angle = initial angle + angular velocity * time # data points = 4



tstart = DOY243 17: 6 +/- 0.1 [min.]
angular velocity = 0.267E-04 +/- 0.918E-05 [rad/sec]

SMM C/P 1989 DOY243 134 +/- 2 degrees



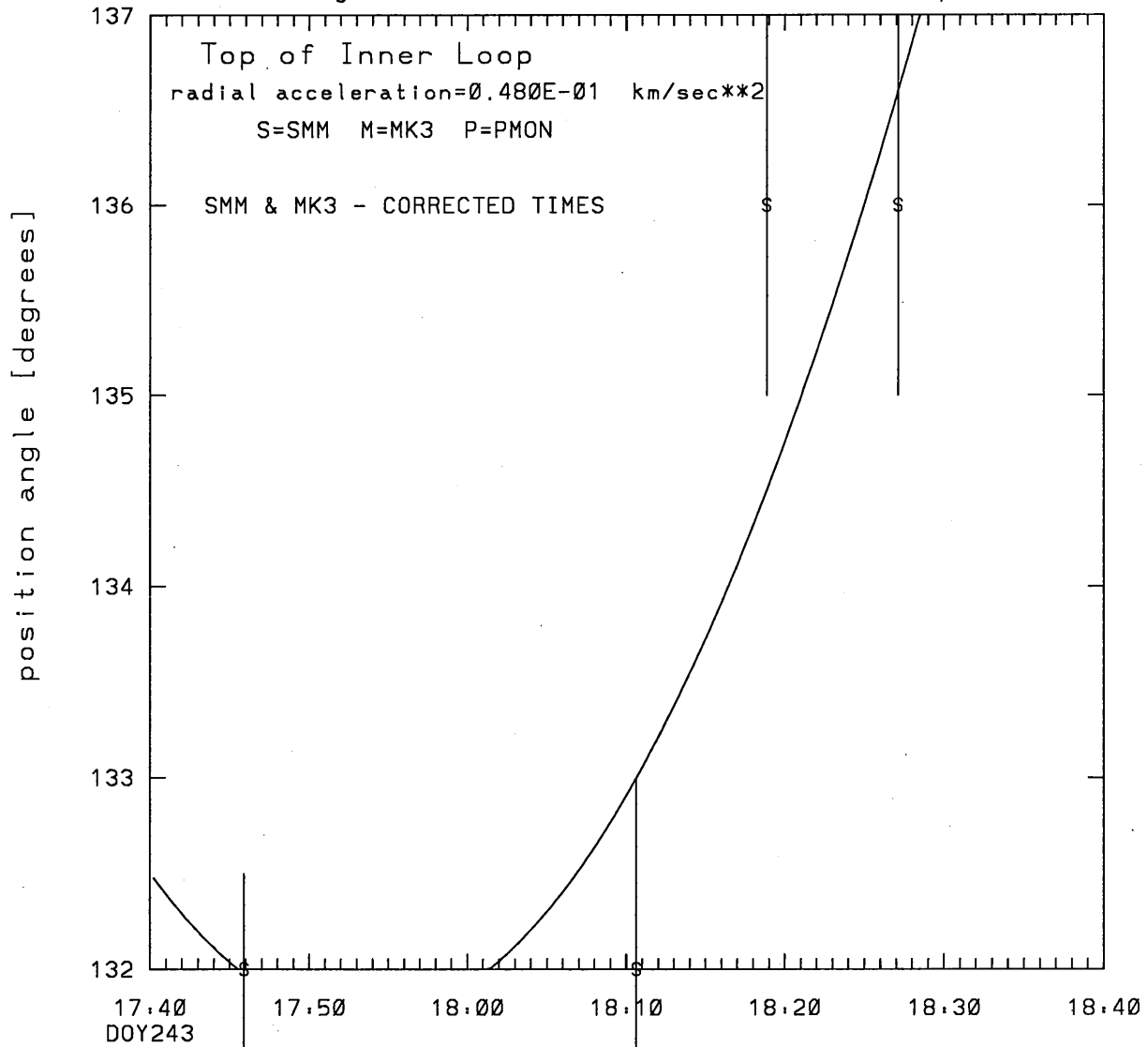
tstart=DOY243 16:49 +/- 33.2 [min.]

radial acceleration = $0.0480 +/- 0.0665$ [km/sec**2]

SMM C/P 1989 DOY243 134 +/- 2 degrees

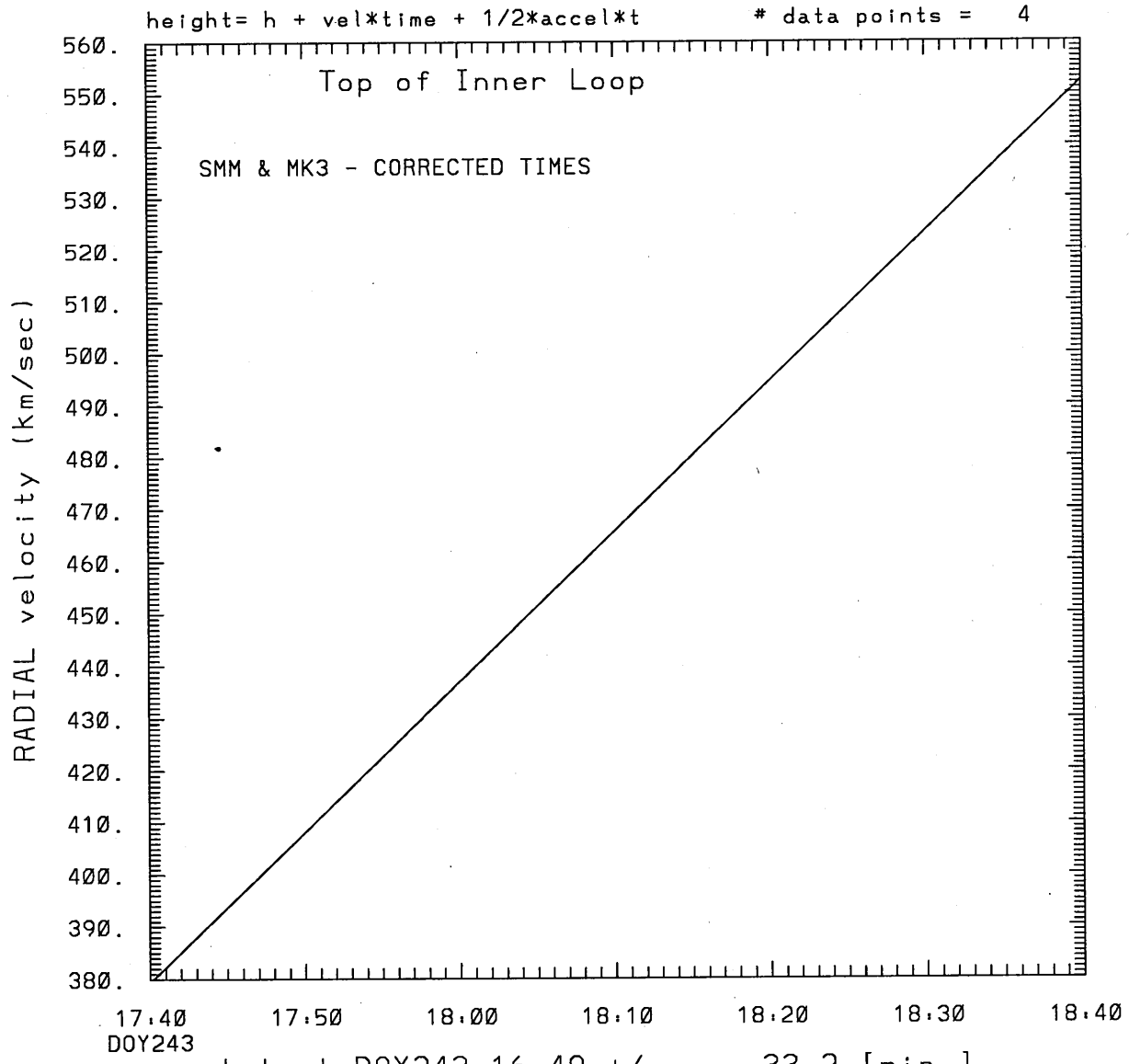
$$\text{angle} = \text{initial angle} + \text{angular velocity} \times \text{time} + \frac{1}{2} \text{angular acceleration} \times \text{time}^2$$

data points = 4



tstart=DOY243 16.49 +/- 33.2 [min.]
angular acceleration=0.416E-07 +/- 0.361E-07 [rad/sec**2]

SMM C/P 1989 DOY243 134 +/- 2 degrees



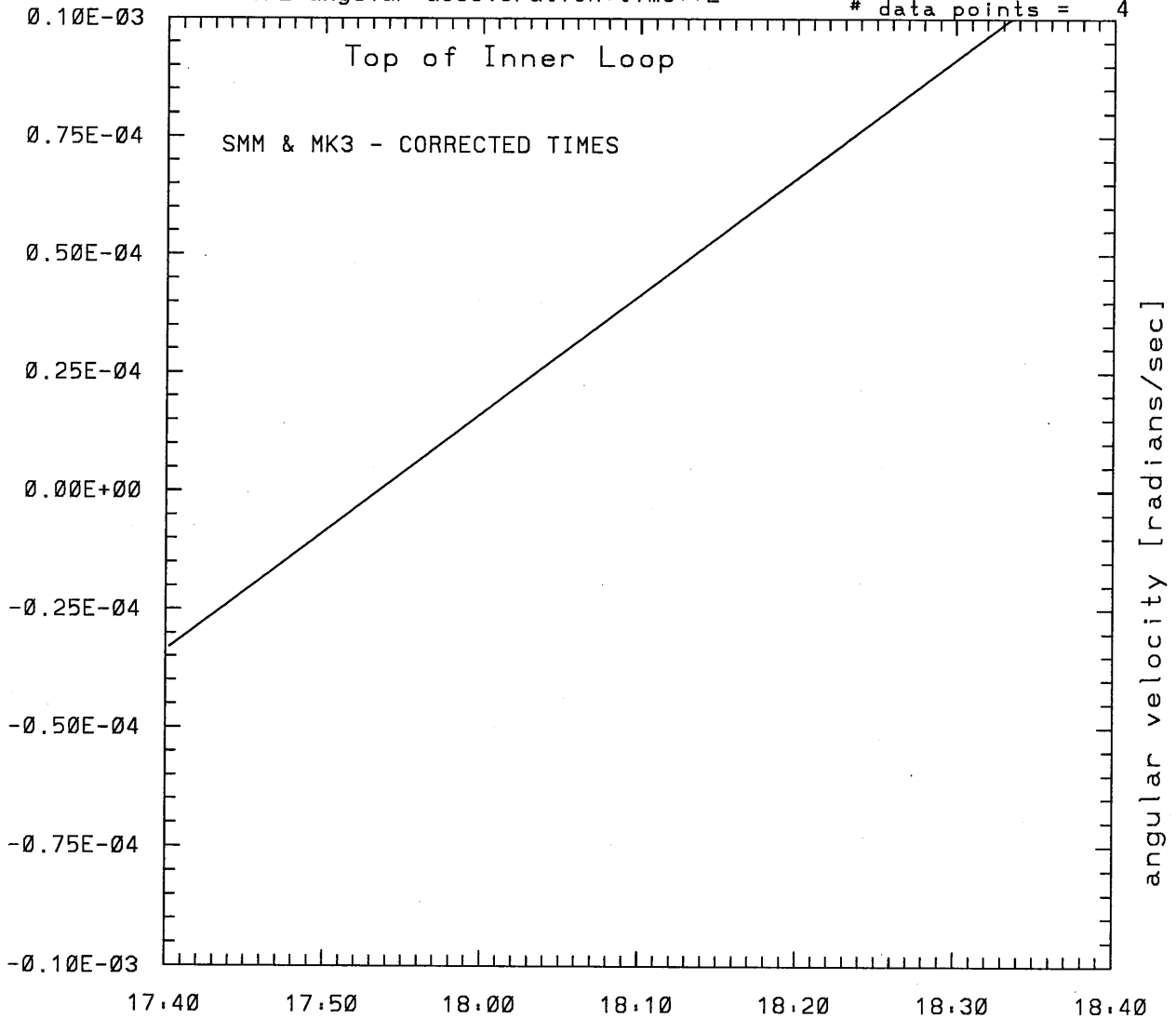
tstart=DOY243 16.49 +/- 33.2 [min.]

radial acceleration=0.480E-01 km/sec**2

SMM C/P 1989 DOY243 134 +/- 2 degrees

$$\text{angle} = \text{initial angle} + \text{angular velocity} \cdot \text{time} + \frac{1}{2} \text{angular acceleration} \cdot \text{time}^2$$

data points = 4



DOY243

tstart=DOY243 16:49 +/- 33.2 [min.]

angular acceleration=0.416E-07 +/-

0.361E-07 [rad/sec**2]

This is a 1 order run

INPUT:

year	doy	time	radii	radius	error in angle	error in angle	datatype
1989	243	17:45:53	2.55 +/-	0.10	132.0 +/-	0.5	SMM
1989	243	18:10:38	3.50 +/-	0.15	132.0 +/-	1.0	SMM
1989	243	18:18:52	3.70 +/-	0.25	136.0 +/-	1.0	SMM
1989	243	18:27: 7	4.20 +/-	0.20	136.0 +/-	1.0	SMM

Structure being measured:
Top of Inner Loop

OUTPUT:

START TIME:

Event began at t = 0 + -0.342E+02 +/- 0.120E+00 [minutes]
In more convenient units:
Event began at DOY 243 17: 6 +/- 0.120E+00 [minutes]
Origin defined at DOY243 17:40

RADIAL INFORMATION:

RADIAL VELOCITY = 448. +/- 17. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.232E+01 +/- 0.386E-01 [solar radii]
c(2) = 0.386E-01 +/- 0.149E-02 [radii/min]
c(2) = 0.448E+03 +/- 0.173E+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)= 0.10574E+00 [radii] see Bevington pg. 114
error in c(2)= 0.30837E-02 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = 0.2671E-04 +/- 0.9184E-05 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 131. +/- 1. [degrees]
a(2) = 0.918E-01 +/- 0.316E-01 [degrees/min]
a(2) = 0.267E-04 +/- 0.918E-05 [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, RADIAL AND TOTAL SPEEDS AT EACH DATA POINT ARE:

The TANGENTIAL velocity at 17:45 = 47. km/sec
The RADIAL velocity at 17:45 = 448. km/sec

The TOTAL velocity at 17:45 = 450. km/sec

The TANGENTIAL velocity at 18:10 = 65. km /sec

The RADIAL velocity at 18:10 = 448. km/sec

The TOTAL velocity at 18:10 = 452. km/sec

The TANGENTIAL velocity at 18:18 = 69. km /sec

The RADIAL velocity at 18:18 = 448. km/sec

The TOTAL velocity at 18:18 = 453. km/sec

The TANGENTIAL velocity at 18:27 = 78. km /sec

The RADIAL velocity at 18:27 = 448. km/sec

The TOTAL velocity at 18:27 = 455. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 0.69

Standard Deviation in start time measurement = 0.154E+02

Error in time = 0.34859E+01 using best fit method

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

Value of reduced Chi Squared returned from nllst2 = 0.235E-02

Reduced Chi Squared = 0.291E-01

Chi Squared = 0.582E-01

The probability for exceeding chi square = 0.998E+00

The correlation coefficient = 0.994E+00

The probability that no LINEAR correlation exists between the variables = 0.6085]

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	243	17:45:53	2.55 +/-	0.10	132.0 +/-	0.5	SMM
1989	243	18:10:38	3.50 +/-	0.15	132.0 +/-	1.0	SMM
1989	243	18:18:52	3.70 +/-	0.25	136.0 +/-	1.0	SMM
1989	243	18:27: 7	4.20 +/-	0.20	136.0 +/-	1.0	SMM

Structure being measured:
Top of Inner Loop

OUTPUT:

START TIME:

Event began at t = 0 + -0.515E+02 +/- 0.332E+02 [minutes]
In more convenient units:
Event began at DOY 243 16:49 +/- 0.332E+02 [minutes]

Origin defined at DOY243 17:40

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.480E-01 +/- 0.665E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.235E+01 +/- 0.649E-01 [solar radii]
c(2) = 0.327E-01 +/- 0.833E-02 [radii/min]
c(2) = 0.379E+03 +/- 0.967E+02 [km/sec]
c(3) = 0.124E-03 +/- 0.172E-03 [radii/min**2]
c(3) = 0.480E-01 +/- 0.665E-01 [km/sec**2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.18621E+00 [radii] Bevington pg 154 (8-30)
Exact error in c(1) = 0.19952E-01 [radii] Bevington pg 154 (8-28)
Approximate error in c(2) = 0.17988E-01 [radii/min] Bevington pg 154 (8-30)
Exact error in c(2) = 0.38375E-02 [radii/min] Bevington pg 154 (8-28)
Approximate error in c(3) = 0.34683E-03 [radii/min**2] Bevington pg 154 (8-30)
Exact error in c(3) = 0.78812E-04 [radii/min**2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= 0.4164E-07 +/- 0.3608E-07[radians/sec**2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 133. +/- 1. [degrees]
a(2) = -0.116E+00 +/- 0.182E+00 [degrees/min]
a(2) = -0.336E-04 +/- 0.530E-04 [rad/sec]
a(3) = 0.429E-02 +/- 0.372E-02 [degrees/min**2]
a(3) = 0.416E-07 +/- 0.361E-07 [rad/sec**2]

THE TANGENTIAL, RADIAL AND TOTAL SPEEDS AT EACH DATA POINT ARE:

The TANGENTIAL velocity at 17:45 = -33. km /sec

The RADIAL velocity at 17:45 = 396. km/sec

The TOTAL velocity at 17:45 = 398. km/sec

The TANGENTIAL velocity at 18:10 = 104. km /sec

The RADIAL velocity at 18:10 = 468. km/sec

The TOTAL velocity at 18:10 = 479. km/sec

The TANGENTIAL velocity at 18:18 = 163. km /sec

The RADIAL velocity at 18:18 = 491. km/sec

The TOTAL velocity at 18:18 = 518. km/sec

The TANGENTIAL velocity at 18:27 = 246. km /sec

The RADIAL velocity at 18:27 = 515. km/sec

The TOTAL velocity at 18:27 = 571. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 0.69

Standard Deviation in start time measurement = 0.154E+02

Value of reduced Chi Squared returned from nllst2 = 0.279E-02

Reduced Chi Squared = 0.432E-01

Chi Squared = 0.432E-01

The probability for exceeding chi square = 0.958E+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 = 0.1249E+01

The correlation between the data and the time**2 term = 0.1154E+01

The correlation between the data and the complete equation of motion=0.1008E+01

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