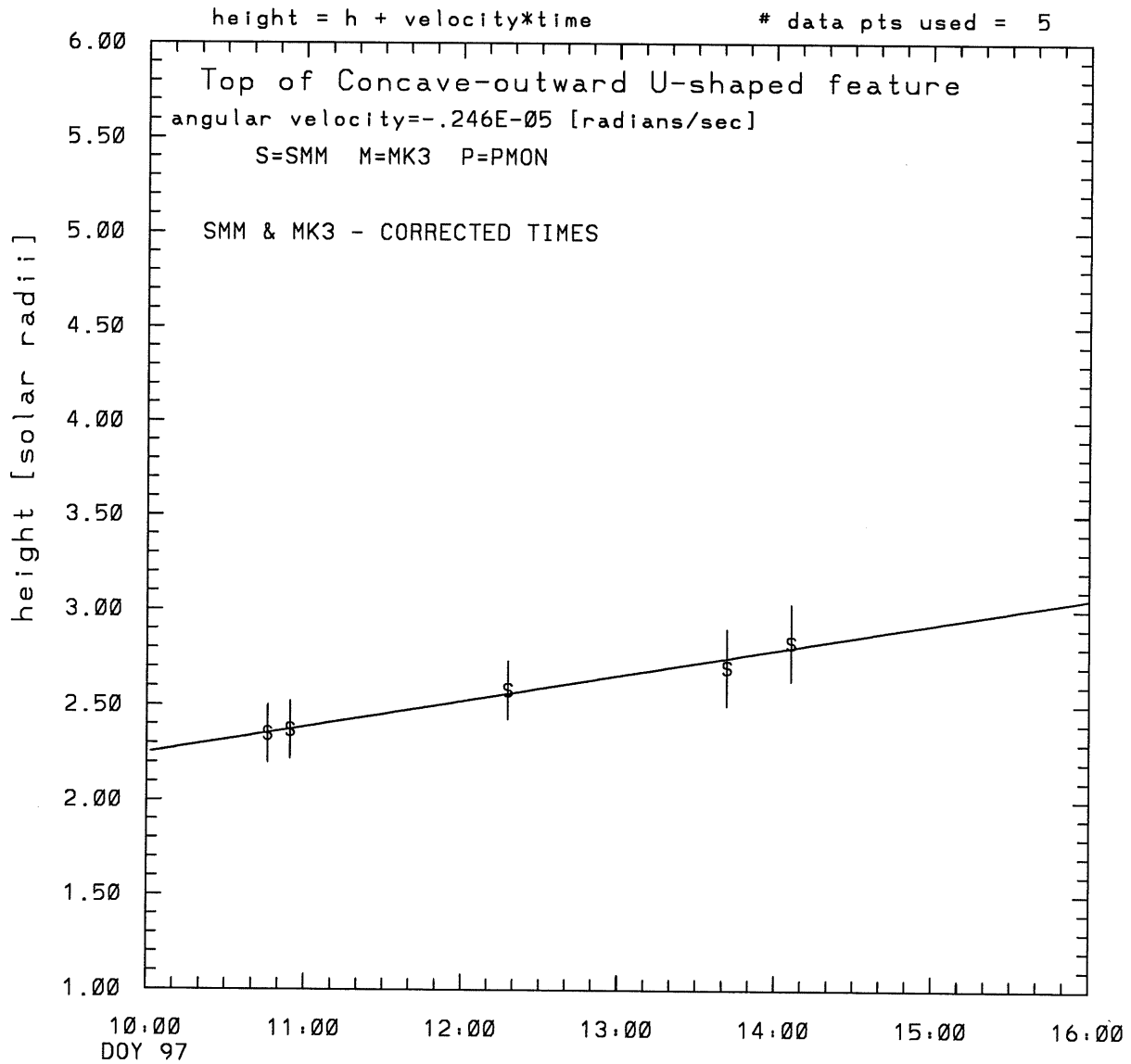


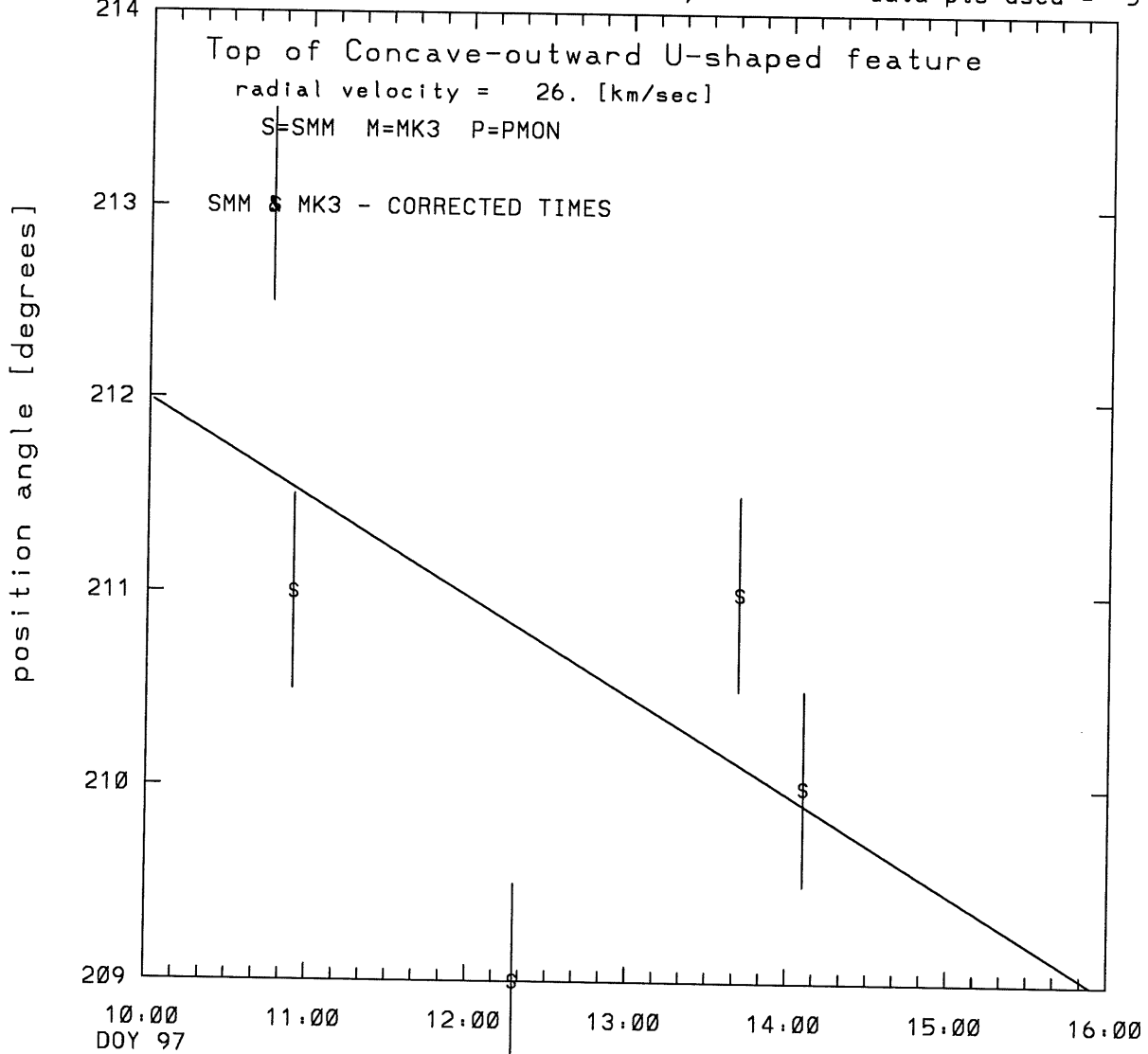
SMM C/P 1980 DOY 97 210 +/- 3 degrees



tstart=DOY 97 0.42 +/- 15.6 [min.]  
radial velocity= 26. +/- 2. [km/sec]

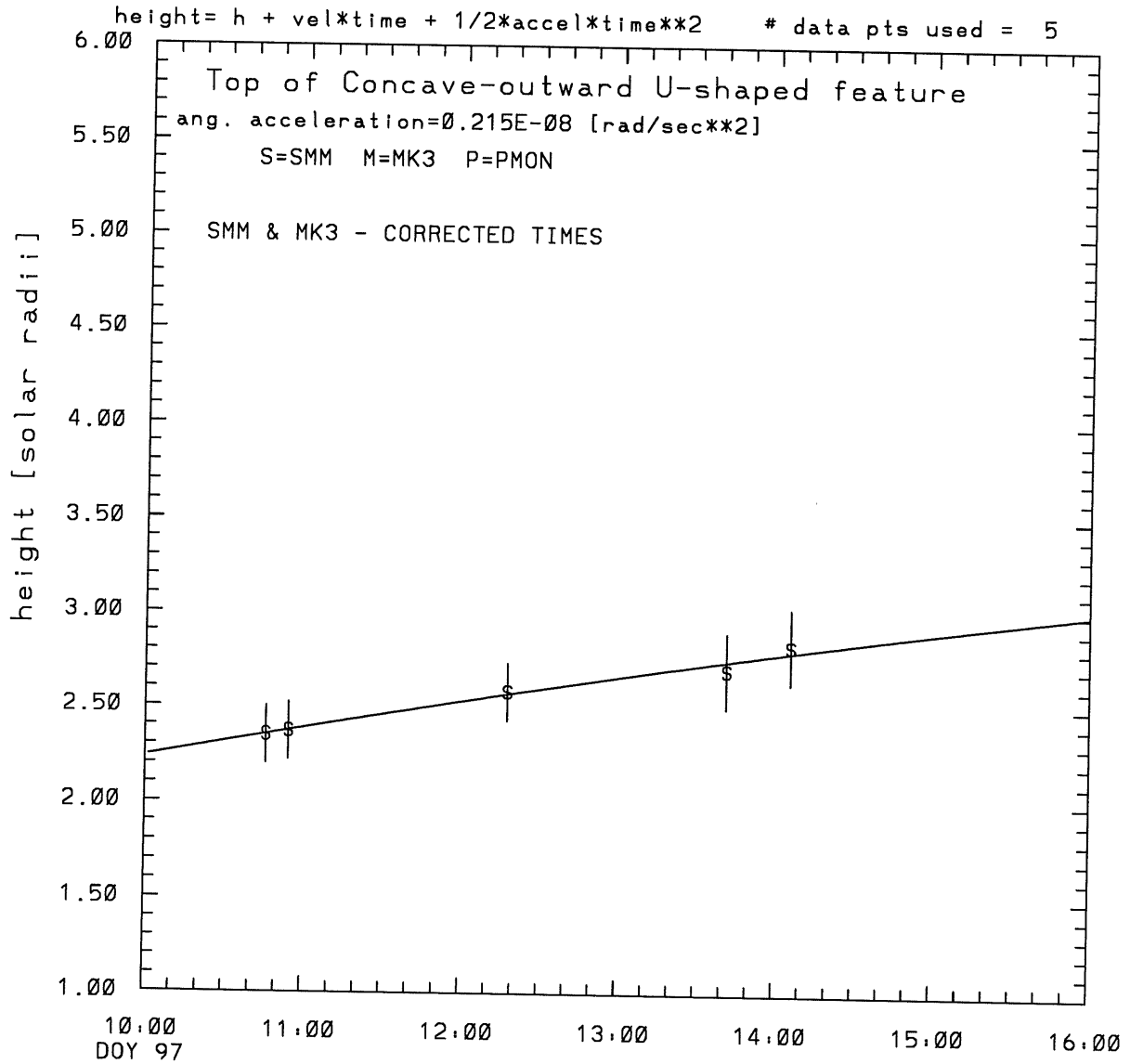
SMM C/P 1980 DOY 97 210 +/- 3 degrees

angle = initial angle + angular velocity \* time # data pts used = 5



tstart=DOY 97 0.42 +/- 15.6 [min.]  
angular velocity=-.246E-05 +/- 0.198E-05 [rad/sec]

SMM C/P 1980 DOY 97 210 +/- 3 degrees



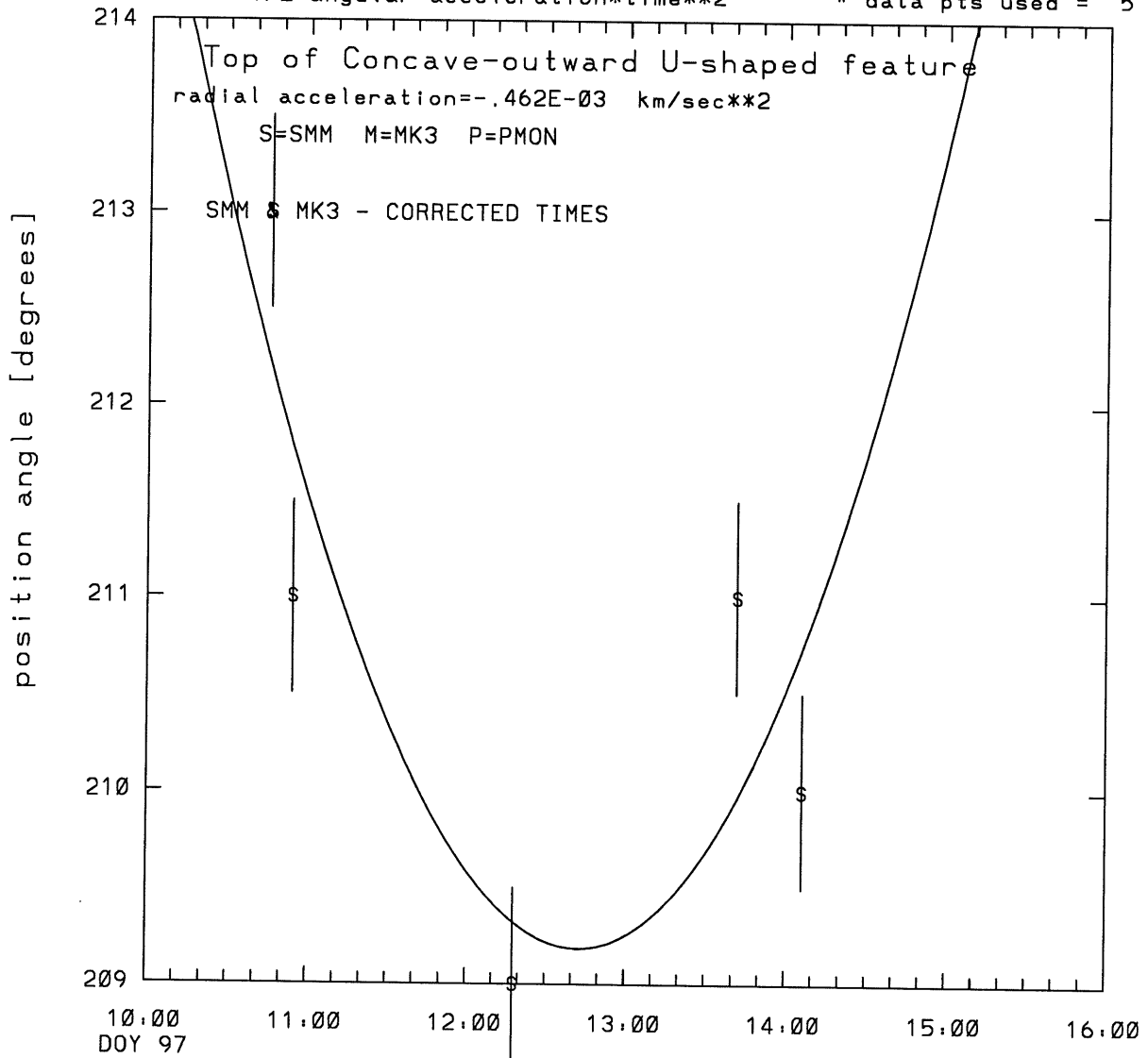
tstart=DOY 97 3.18 +/- 348.0 [min.]

radial acceleration =  $-0.0005 +/- 0.0013$  [km/sec\*\*2]

SMM C/P 1980 DOY 97 210 +/- 3 degrees

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

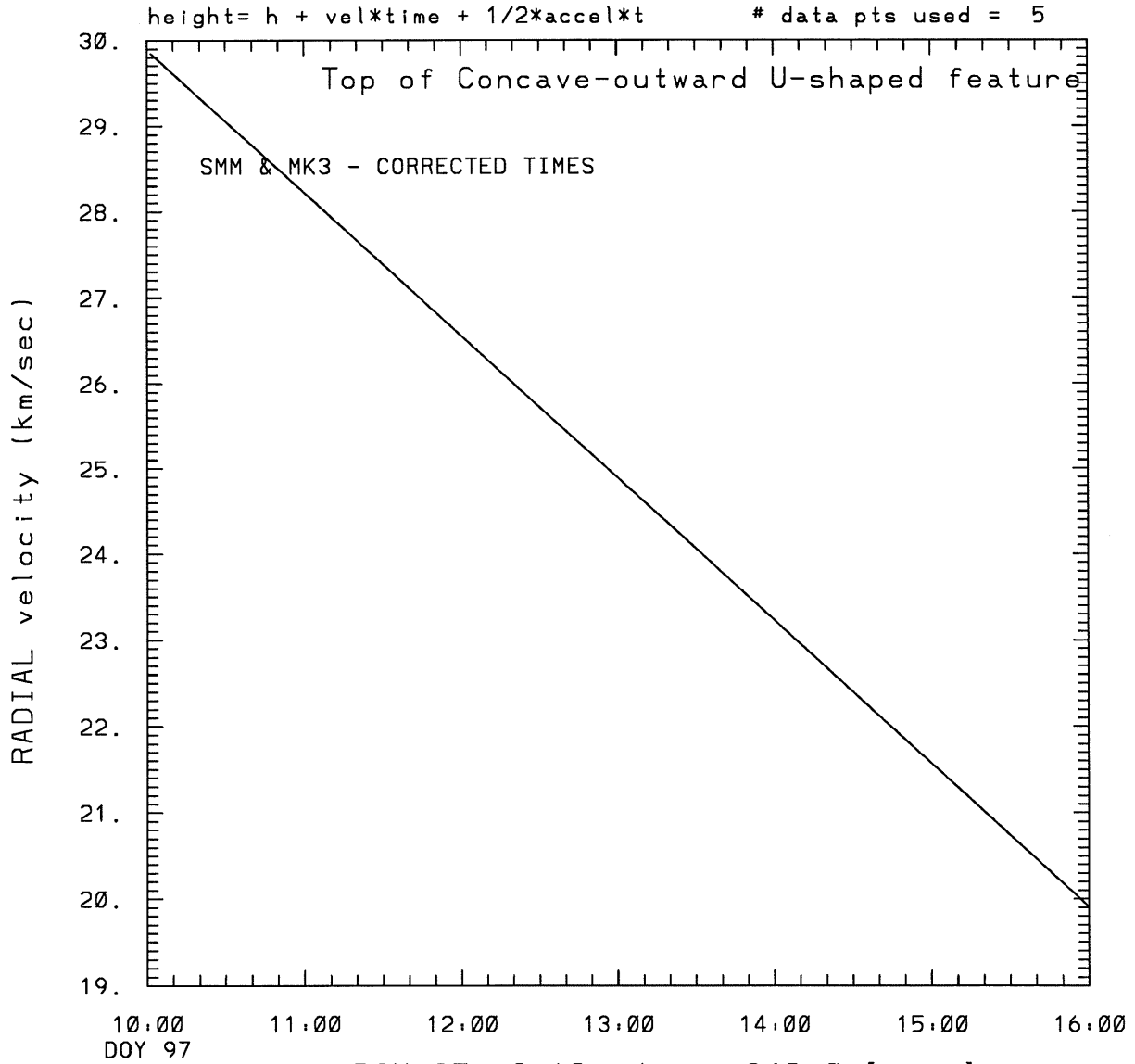
# data pts used = 5



tstart=DOY 97 3:18 +/- 348.0 [min.]

angular acceleration =  $0.215E-08$  +/-  $0.116E-08$  [rad/sec\*\*2]

SMM C/P 1980 DOY 97 210 +/- 3 degrees



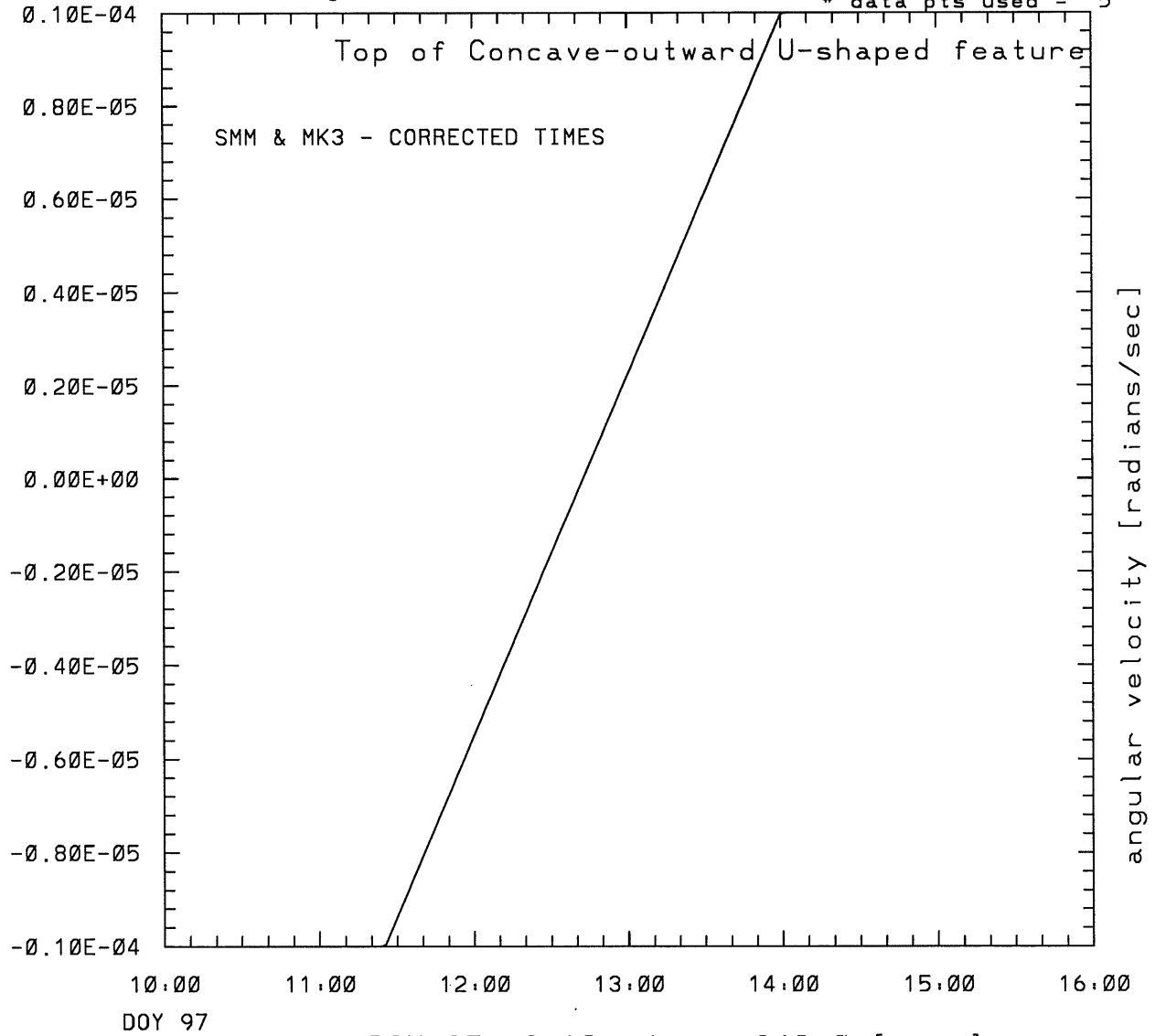
tstart=DOY 97 3:18 +/- 348.0 [min.]

radial acceleration=-.462E-03 km/sec\*\*2

SMM C/P 1980 DOY 97 210 +/- 3 degrees

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

# data pts used = 5



tstart=DOY 97 3.18 +/- 348.0 [min.]  
angular acceleration=0.215E-08 +/-  
0.116E-08 [rad/sec\*\*2]

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

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

year	day	time	radii	radius	angle	error in angle	error in angle	datatype
1980	97	10:45:54	2.35 +/- 0.15	213.0 +/- 0.5			SMM	
1980	97	10:54:29	2.37 +/- 0.15	211.0 +/- 0.5			SMM	
1980	97	12:17:55	2.58 +/- 0.15	209.0 +/- 0.5			SMM	
1980	97	13:41:50	2.70 +/- 0.20	211.0 +/- 0.5			SMM	
1980	97	14: 6:16	2.83 +/- 0.20	210.0 +/- 0.5			SMM	

\*\*\*\*\*  
Structure being measured:  
Top of Concave-outward U-shaped feature  
\*\*\*\*\*

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

START TIME:

Event began at t = 0 + -0.558E+03 +/- 0.156E+02 [minutes]  
In more convenient units:  
Event began at DOY 97 0:42 +/- 0.156E+02 [minutes]

Origin defined at DOY 97 10: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 26. +/- 2. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.225E+01 +/- 0.211E-01 [solar radii]  
c(2) = 0.224E-02 +/- 0.147E-03 [radii/min]  
c(2) = 0.260E+02 +/- 0.170E+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)= 0.30160E-01 [radii] see Bevington pg. 114  
error in c(2)= 0.18426E-03 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = -0.2462E-05 +/- 0.1984E-05 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 212. +/- 1. [degrees]  
a(2) = -0.846E-02 +/- 0.682E-02 [degrees/min]  
a(2) = -0.246E-05 +/- 0.198E-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 RADIAL velocity at 10:45 = 26. km/sec

The RADIAL velocity at 10:54 = 26. km/sec

The RADIAL velocity at 12:17 = 26. km/sec

The RADIAL velocity at 13:41 = 26. km/sec

The RADIAL velocity at 14: 6 = 26. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.21  
Standard Deviation in start time measurement = 0.826E+02  
Error in time = 0.26313E+02 using best fit method  
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.648E-03  
Reduced Chi Squared = 0.472E-02  
Chi Squared = 0.142E-01  
The probability for exceeding chi square = 0.100E+01

The correlation coefficient = 0.990E+00  
The probability that no LINEAR correlation exists between the variables = 0.12051  
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
1980	97	10:45:54	2.35 +/-	0.15	213.0 +/-	0.5	SMM
1980	97	10:54:29	2.37 +/-	0.15	211.0 +/-	0.5	SMM
1980	97	12:17:55	2.58 +/-	0.15	209.0 +/-	0.5	SMM
1980	97	13:41:50	2.70 +/-	0.20	211.0 +/-	0.5	SMM
1980	97	14: 6:16	2.83 +/-	0.20	210.0 +/-	0.5	SMM

\*\*\*\*\*  
Structure being measured:  
Top of Concave-outward U-shaped feature  
\*\*\*\*\*

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

START TIME:

Event began at t = 0 + -0.404E+03 +/- 0.348E+03 [minutes]  
In more convenient units:  
Event began at DOY 97 3:18 +/- 0.348E+03 [minutes]

Origin defined at DOY 97 10: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = -0.462E-03 +/- 0.129E-02 km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.224E+01 +/- 0.504E-01 [solar radii]  
c(2) = 0.258E-02 +/- 0.951E-03 [radii/min]  
c(2) = 0.299E+02 +/- 0.110E+02 [km/sec]  
c(3) = -0.119E-05 +/- 0.334E-05 [radii/min\*\*2]  
c(3) = -0.462E-03 +/- 0.129E-02 [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.78965E-01 [radii] Bevington pg 154 (8-30)  
Exact error in c(1) = 0.89892E-02 [radii] Bevington pg 154 (8-28)  
Approximate error in c(2) = 0.14689E-02 [radii/min] Bevington pg 154 (8-30)  
Exact error in c(2) = 0.23425E-03 [radii/min] Bevington pg 154 (8-28)  
Approximate error in c(3) = 0.50532E-05 [radii/min\*\*2] Bevington pg 154 (8-30)  
Exact error in c(3) = 0.10237E-05 [radii/min\*\*2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= 0.2150E-08 +/- 0.1158E-08[radians/sec\*\*2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 215. +/- 2. [degrees]  
a(2) = -0.721E-01 +/- 0.347E-01 [degrees/min]  
a(2) = -0.210E-04 +/- 0.101E-04 [rad/sec]  
a(3) = 0.222E-03 +/- 0.119E-03 [degrees/min\*\*2]  
a(3) = 0.215E-08 +/- 0.116E-08 [rad/sec\*\*2]

The RADIAL velocity at 10:45 = 29. km/sec  
The RADIAL velocity at 10:54 = 28. km/sec  
The RADIAL velocity at 12:17 = 26. km/sec  
The RADIAL velocity at 13:41 = 24. km/sec  
The RADIAL velocity at 14: 6 = 23. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.21  
Standard Deviation in start time measurement = 0.826E+02  
Value of reduced Chi Squared returned from nllst2 = 0.829E-03  
Reduced Chi Squared = 0.751E-02  
Chi Squared = 0.150E-01  
The probability for exceeding chi square = 0.999E+00

For a second order fit 3 correlation coefficients are given:

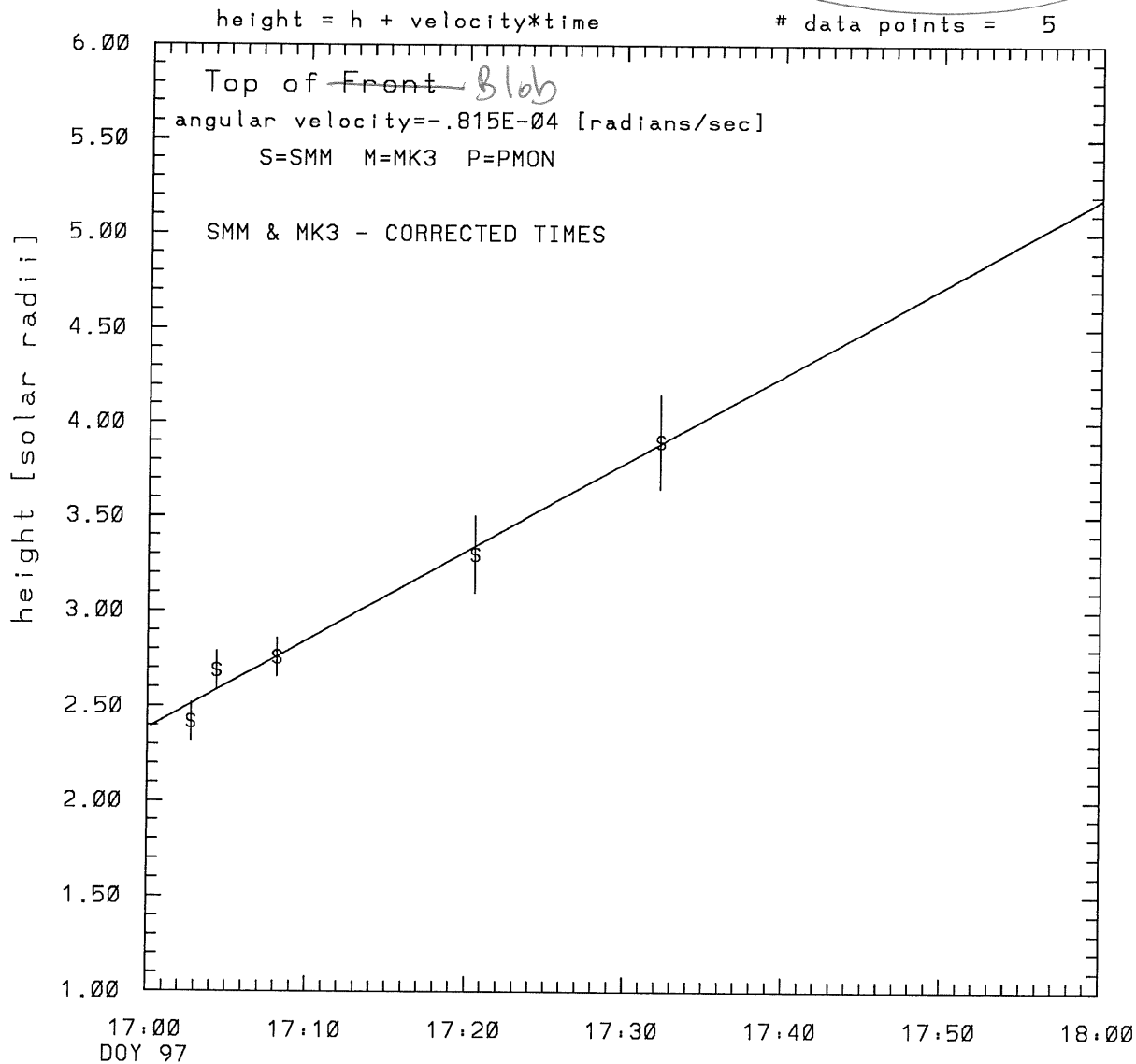
(Using equation of motion:  $r = a + bt + at^2$ )

The correlation between the data and the term linear in time = 0.9619E+00  
The correlation between the data and the time\*\*2 term = 0.9279E+00  
The correlation between the data and the complete equation of motion=0.9865E+00  
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]



This is end of day 97  
2:46 event!

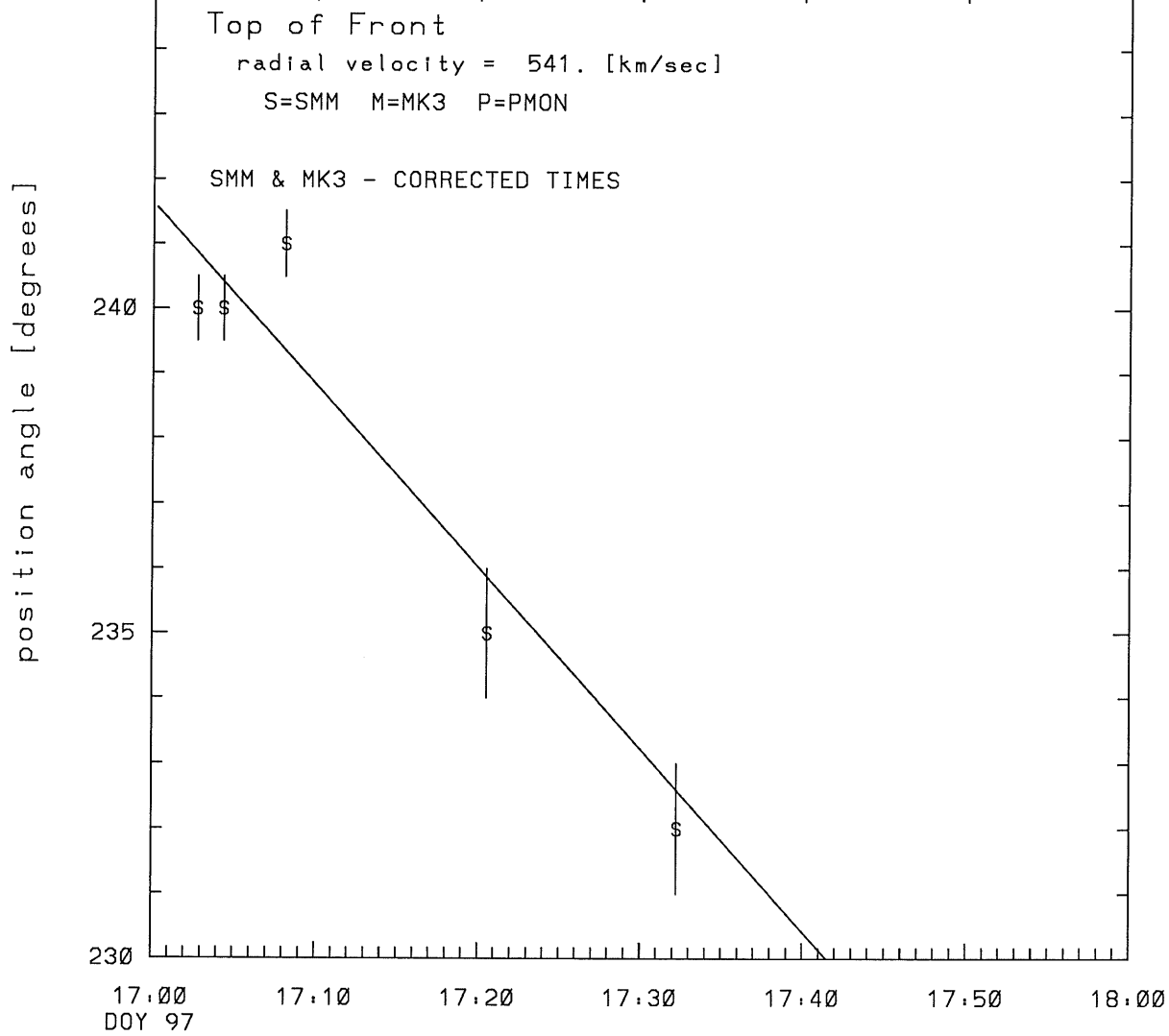
SMM C/P 1980 DOY 97 237 +/- 5 degrees



tstart=DOY 97 16:32 +/- 0.2 [min.]  
radial velocity= 541. +/- 62. [km/sec]

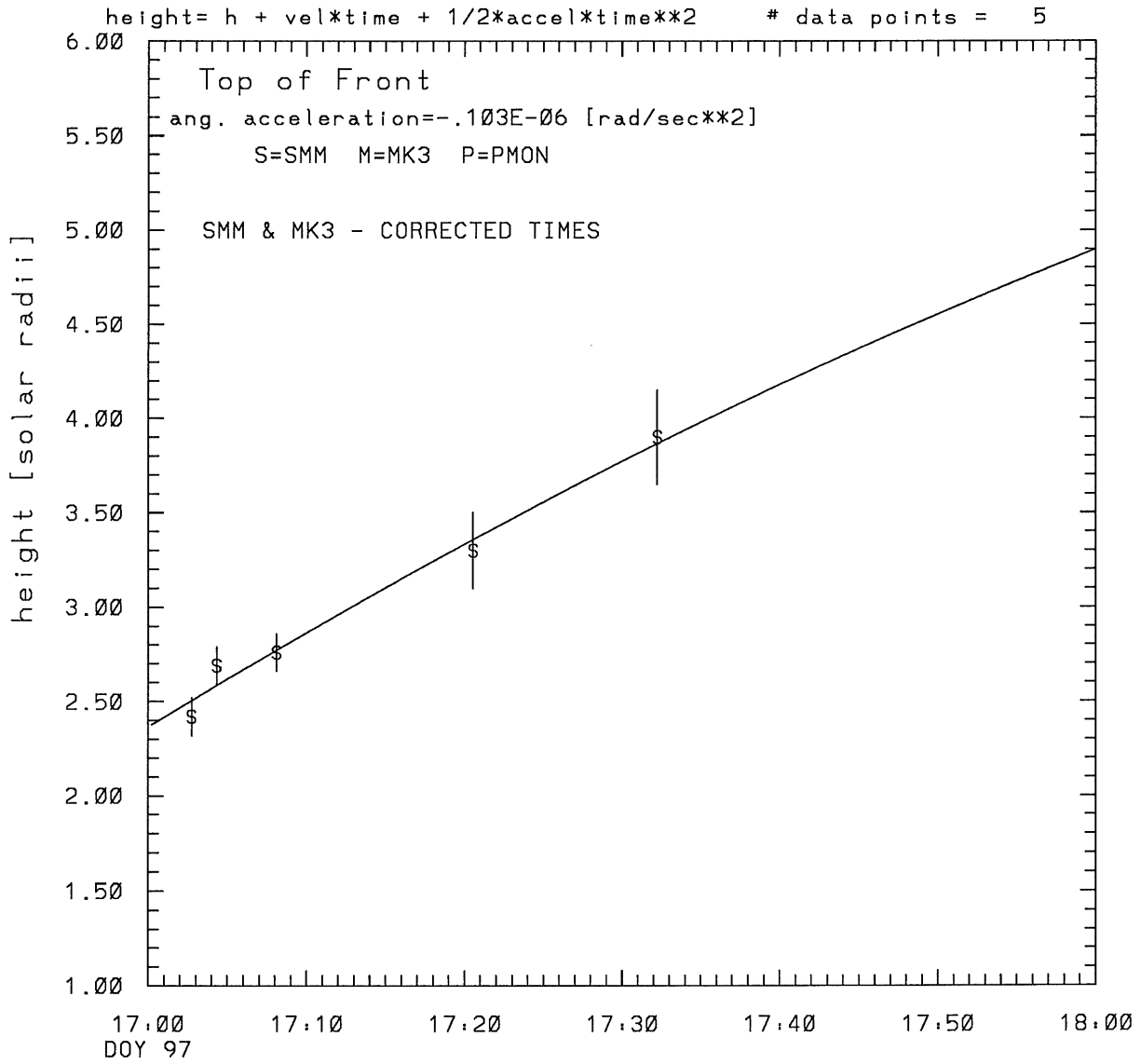
SMM C/P 1980 DOY 97 237 +/- 5 degrees

angle = initial angle + angular velocity \* time # data points = 5



tstart=DOY 97 16:32 +/- 0.2 [min.]  
angular velocity=-.815E-04 +/- 0.190E-04 [rad/sec]

SMM C/P 1980 DOY 97 237 +/- 5 degrees

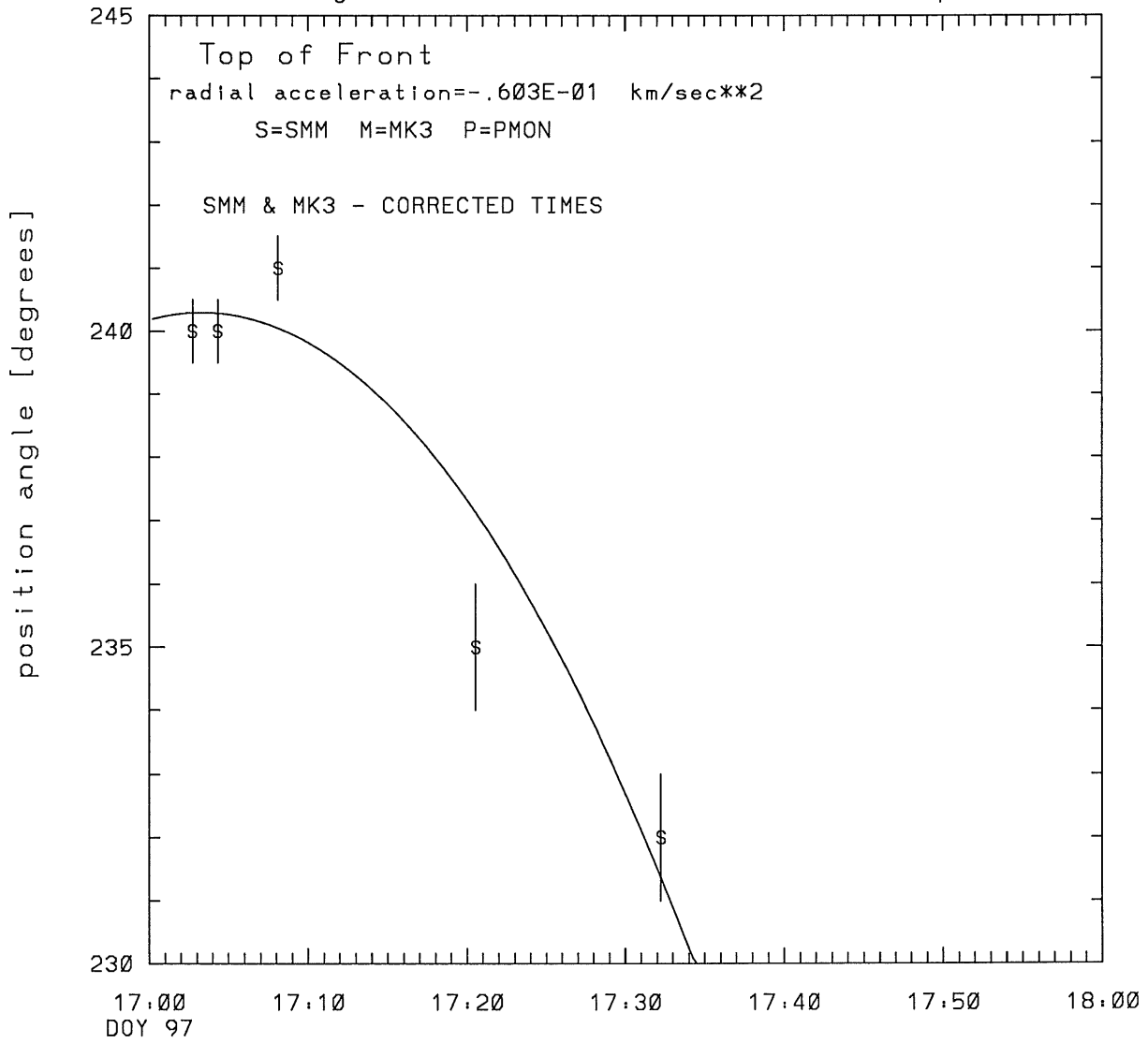


tstart = DOY 97 16:37 +/- 35.7 [min.]

radial acceleration =  $-0.0603 +/- 0.2793$  [km/sec\*\*2]

SMM C/P 1980 DOY 97 237 +/- 5 degrees

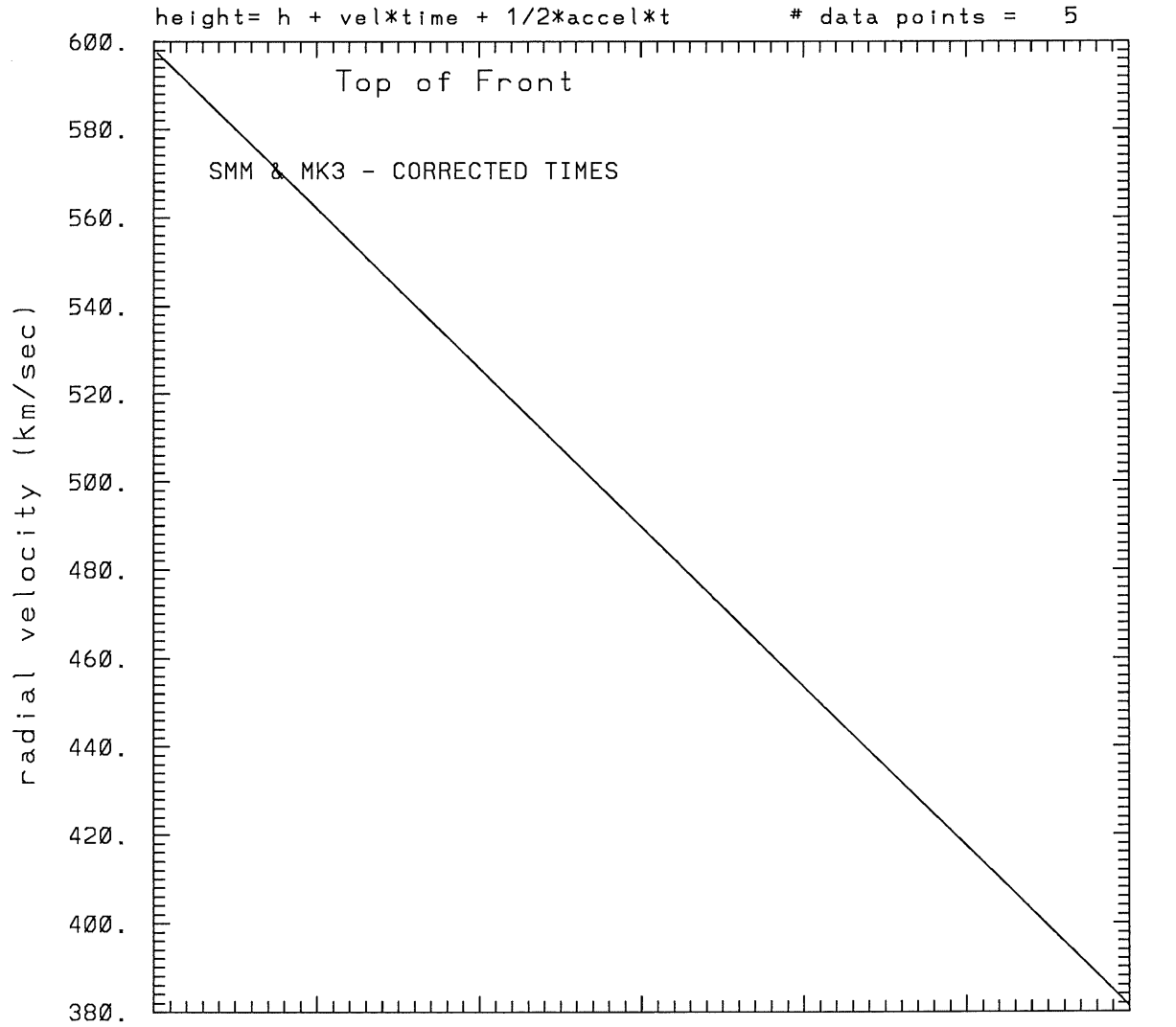
angle = initial angle + angular velocity\*time  
+ 1/2 angular acceleration\*time\*\*2 # data points = 5



tstart = DOY 97 16:37 +/- 35.7 [min.]

angular acceleration =  $-.103E-06$  +/-  $0.716E-07$  [rad/sec\*\*2]

SMM C/P 1980 DOY 97 237 +/- 5 degrees



17:00  
DOY 97

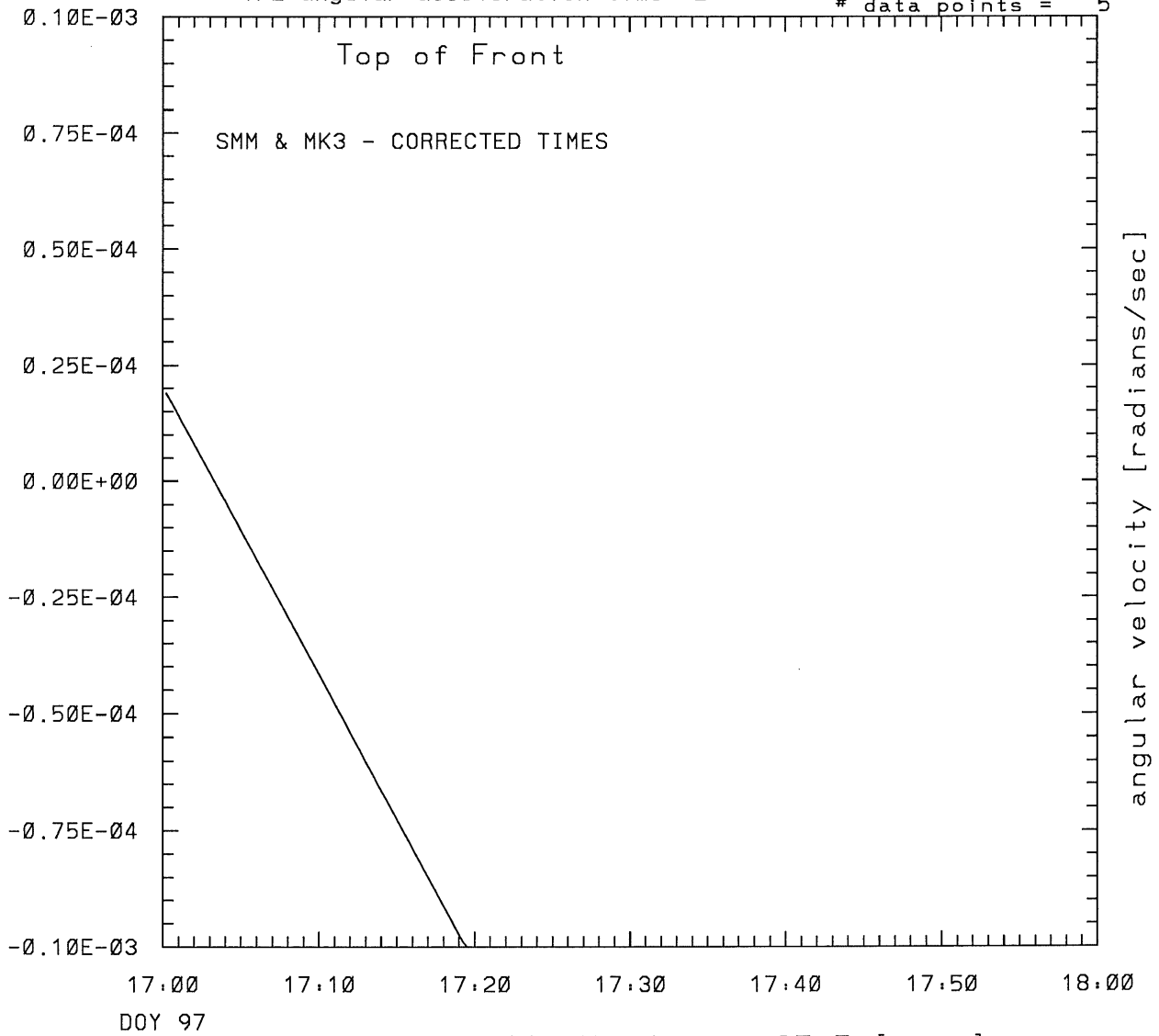
tstart=DOY 97 16:37 +/- 35.7 [min.]

radial acceleration =  $-.603E-01$  km/sec\*\*2

SMM C/P 1980 DOY 97 237 +/- 5 degrees

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

# data points = 5



tstart=DOY 97 16:37 +/- 35.7 [min.]

angular acceleration=-.103E-06 +/-

0.716E-07 [rad/sec\*\*2]



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

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

year	day	time	radii	radius	error in angle	error in angle	datatype
1980	97	17: 2:44	2.42 +/- 0.10	240.0 +/- 0.5		SMM	
1980	97	17: 4:19	2.69 +/- 0.10	240.0 +/- 0.5		SMM	
1980	97	17: 8: 7	2.76 +/- 0.10	241.0 +/- 0.5		SMM	
1980	97	17:20:33	3.30 +/- 0.20	235.0 +/- 1.0		SMM	
1980	97	17:32:16	3.90 +/- 0.25	232.0 +/- 1.0		SMM	

\*\*\*\*\*

Structure being measured:

Top of ~~Front~~ blob

\*\*\*\*\*

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

START TIME:

Event began at t = 0 + -0.297E+02 +/- 0.157E+00 [minutes]

In more convenient units:

Event began at DOY 97 16:32 +/- 0.157E+00 [minutes]

Origin defined at DOY 97 17: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 541. +/- 62. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.238E+01 +/- 0.551E-01 [solar radii]  
c(2) = 0.467E-01 +/- 0.533E-02 [radii/min]  
c(2) = 0.541E+03 +/- 0.619E+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)= 0.59154E-01 [radii] see Bevington pg. 114

error in c(2)= 0.33539E-02 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = -0.8153E-04 +/- 0.1904E-04 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 242. +/- 1. [degrees]  
a(2) = -0.280E+00 +/- 0.654E-01 [degrees/min]  
a(2) = -0.815E-04 +/- 0.190E-04 [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 17: 2 = 541. km/sec

The RADIAL velocity at 17: 4 = 541. km/sec

The RADIAL velocity at 17: 8 = 541. km/sec

The RADIAL velocity at 17:20 = 541. km/sec

The RADIAL velocity at 17:32 = 541. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.59

Standard Deviation in start time measurement = 0.112E+02

Error in time = 0.31263E+01 using best fit method

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

Value of reduced Chi Squared returned from nllst2 = 0.726E-02

Reduced Chi Squared = 0.127E-01

Chi Squared = 0.382E-01

The probability for exceeding chi square = 0.999E+00

The correlation coefficient = 0.992E+00

The probability that no LINEAR correlation exists between the variables = 0.8022]

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

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

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

year	doy	time	radii	radius	error in angle	error in angle	datatype
1980	97	17: 2:44	2.42 +/-	0.10	240.0 +/-	0.5	SMM
1980	97	17: 4:19	2.69 +/-	0.10	240.0 +/-	0.5	SMM
1980	97	17: 8: 7	2.76 +/-	0.10	241.0 +/-	0.5	SMM
1980	97	17:20:33	3.30 +/-	0.20	235.0 +/-	1.0	SMM
1980	97	17:32:16	3.90 +/-	0.25	232.0 +/-	1.0	SMM

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

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

START TIME:

Event began at t = 0 + -0.246E+02 +/- 0.357E+02 [minutes]  
In more convenient units:  
Event began at DOY 97 16:37 +/- 0.357E+02 [minutes]

Origin defined at DOY 97 17: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = -0.603E-01 +/- 0.279E+00 km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.236E+01 +/- 0.112E+00 [solar radii]  
c(2) = 0.516E-01 +/- 0.235E-01 [radii/min]  
c(2) = 0.598E+03 +/- 0.272E+03 [km/sec]  
c(3) = -0.156E-03 +/- 0.722E-03 [radii/min\*\*2]  
c(3) = -0.603E-01 +/- 0.279E+00 [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.11985E+00 [radii] Bevington pg 154 (8-30)  
Exact error in c(1) = 0.57454E-01 [radii] Bevington pg 154 (8-28)  
Approximate error in c(2) = 0.20825E-01 [radii/min] Bevington pg 154 (8-30)  
Exact error in c(2) = 0.88234E-02 [radii/min] Bevington pg 154 (8-28)  
Approximate error in c(3) = 0.59114E-03 [radii/min\*\*2] Bevington pg 154 (8-30)  
Exact error in c(3) = 0.22455E-03 [radii/min\*\*2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= -0.1033E-06 +/- 0.7163E-07[radians/sec\*\*2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 240. +/- 1. [degrees]  
a(2) = 0.701E-01 +/- 0.250E+00 [degrees/min]  
a(2) = 0.204E-04 +/- 0.726E-04 [rad/sec]  
a(3) = -0.107E-01 +/- 0.739E-02 [degrees/min\*\*2]  
a(3) = -0.103E-06 +/- 0.716E-07 [rad/sec\*\*2]

The RADIAL velocity at 17: 2 = 588. km/sec  
The RADIAL velocity at 17: 4 = 583. km/sec  
The RADIAL velocity at 17: 8 = 569. km/sec  
The RADIAL velocity at 17:20 = 524. km/sec  
The RADIAL velocity at 17:32 = 482. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.59  
Standard Deviation in start time measurement = 0.112E+02  
Value of reduced Chi Squared returned from nllst2 = 0.953E-02  
Reduced Chi Squared = 0.247E-01  
Chi Squared = 0.494E-01  
The probability for exceeding chi square = 0.991E+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 = 0.8252E+00  
The correlation between the data and the time\*\*2 term = 0.7512E+00  
The correlation between the data and the complete equation of motion=0.9752E+00  
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]