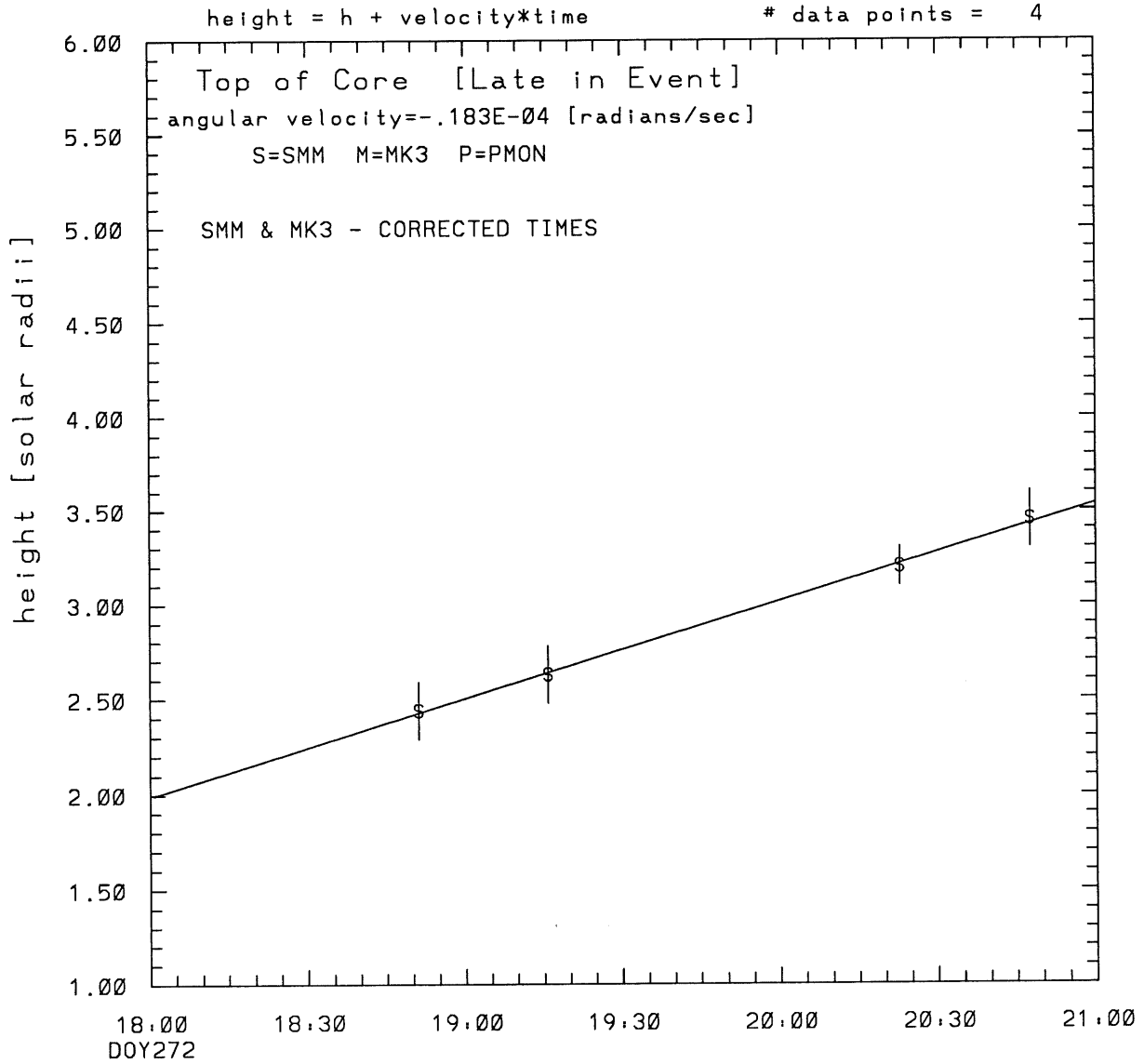


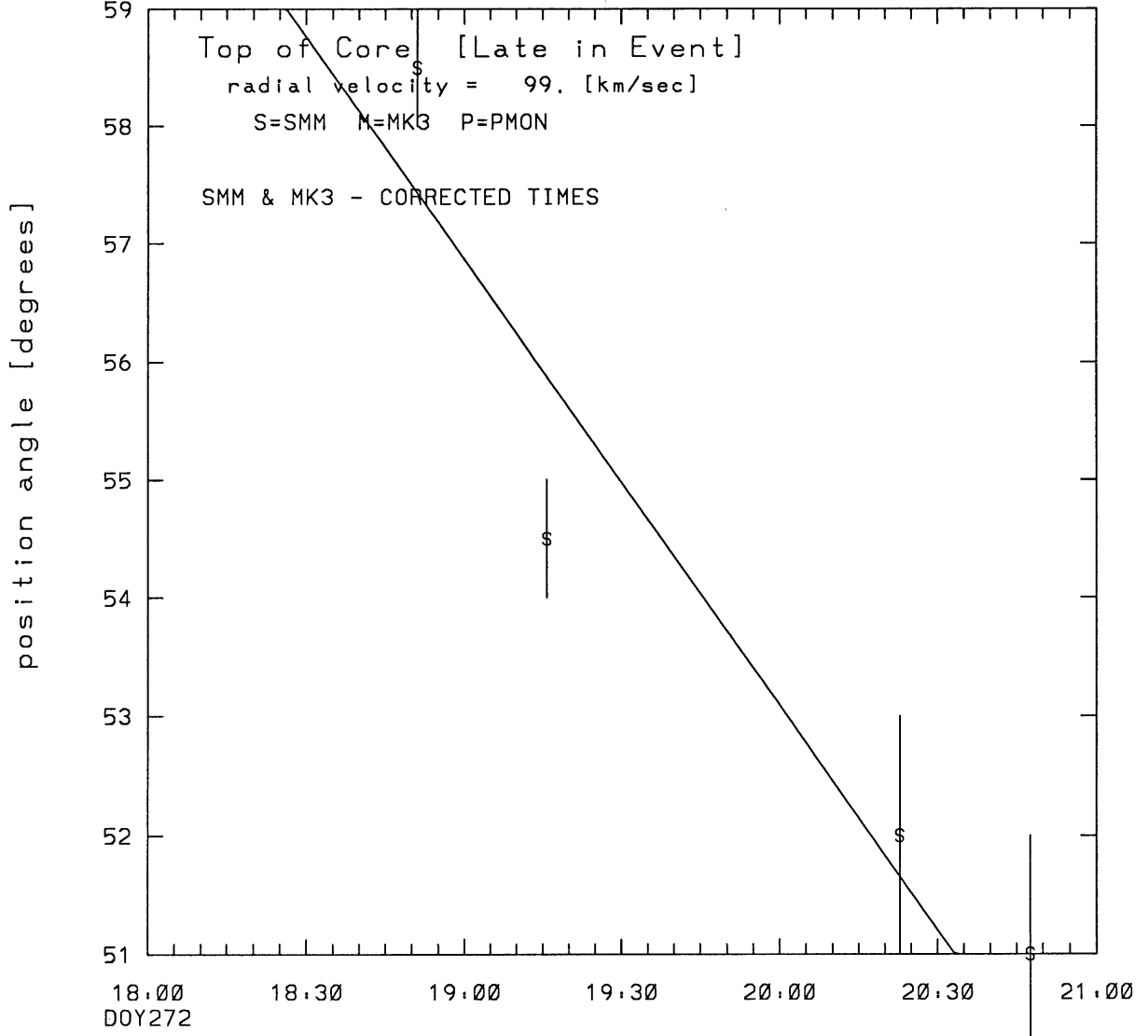
SMM C/P 1989 DOY272 54 +/- 4 degrees



tstart=DOY272 16: 5 +/- 1.7 [min.]  
radial velocity= 99. +/- 2. [km/sec]

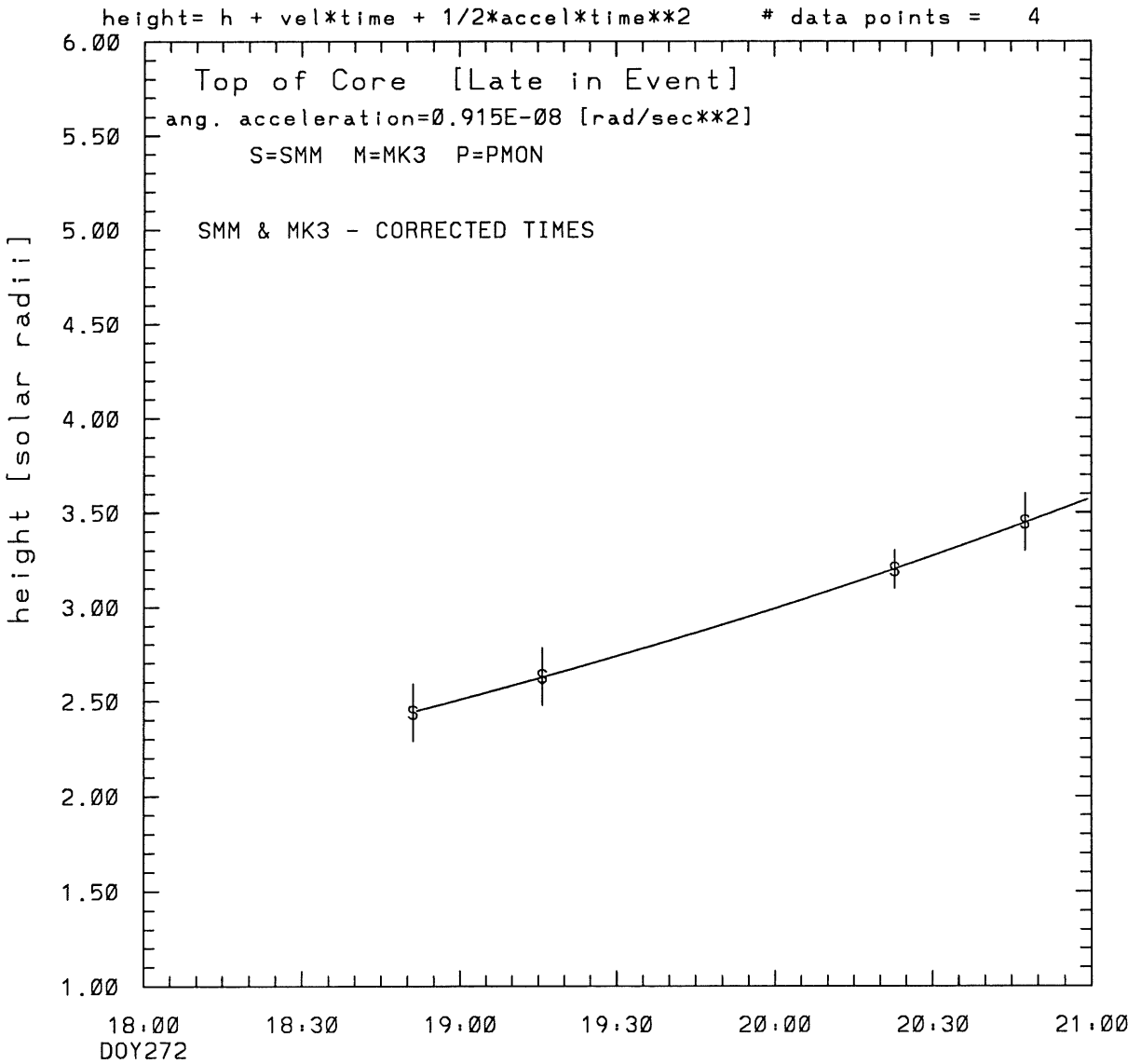
SMM C/P 1989 DOY272 54 +/- 4 degrees

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



tstart=DOY272 16: 5 +/- 1.7 [min.]  
angular velocity=-.183E-04 +/- 0.495E-05 [rad/sec]

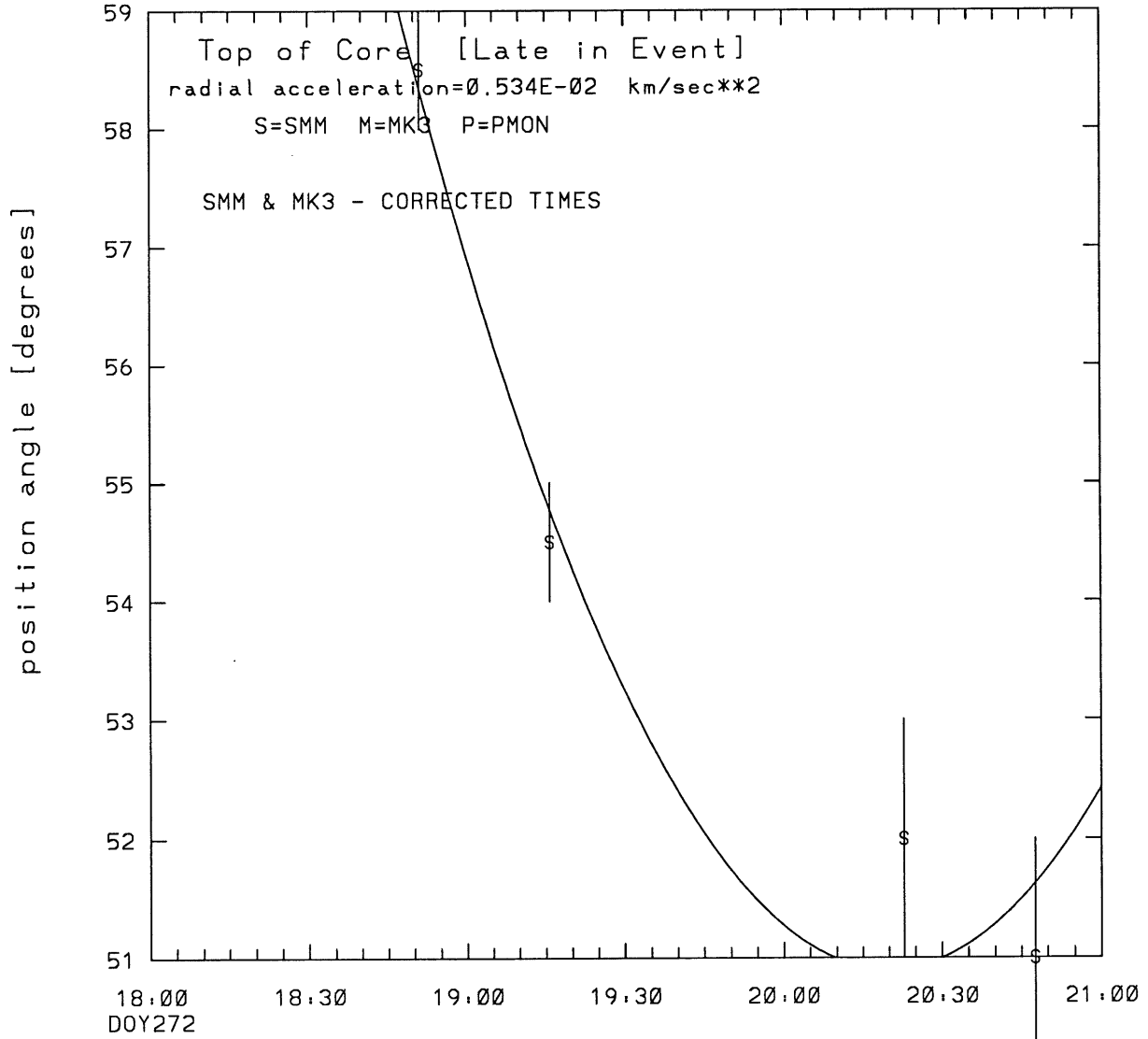
SMM C/P 1989 DOY272 54 +/- 4 degrees



tstart=DOY272 14:38 from derivative=0  
Event begins at 1.55 Solar Radii  
radial acceleration =  $0.0053 \pm 0.0008$  [km/sec\*\*2]

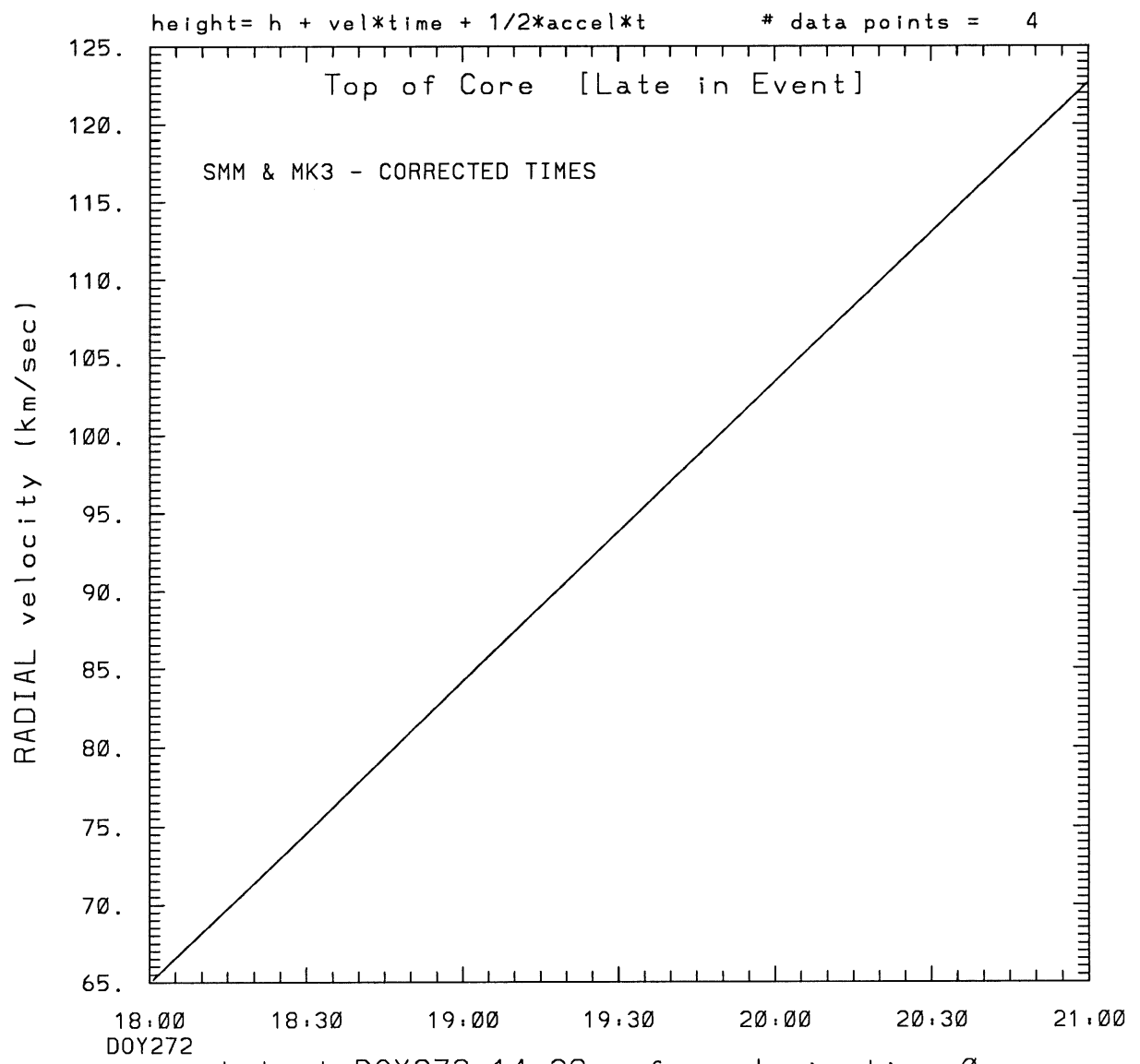
SMM C/P 1989 DOY272 54 +/- 4 degrees

angle = initial angle + angular velocity\*time  
+ 1/2 angular acceleration\*time\*\*2 # data points = 4



tstart=DOY272 14:38 from derivative=0  
angular acceleration=0.915E-08 +/- 0.273E-08 [rad/sec\*\*2]

SMM C/P 1989 DOY272 54 +/- 4 degrees

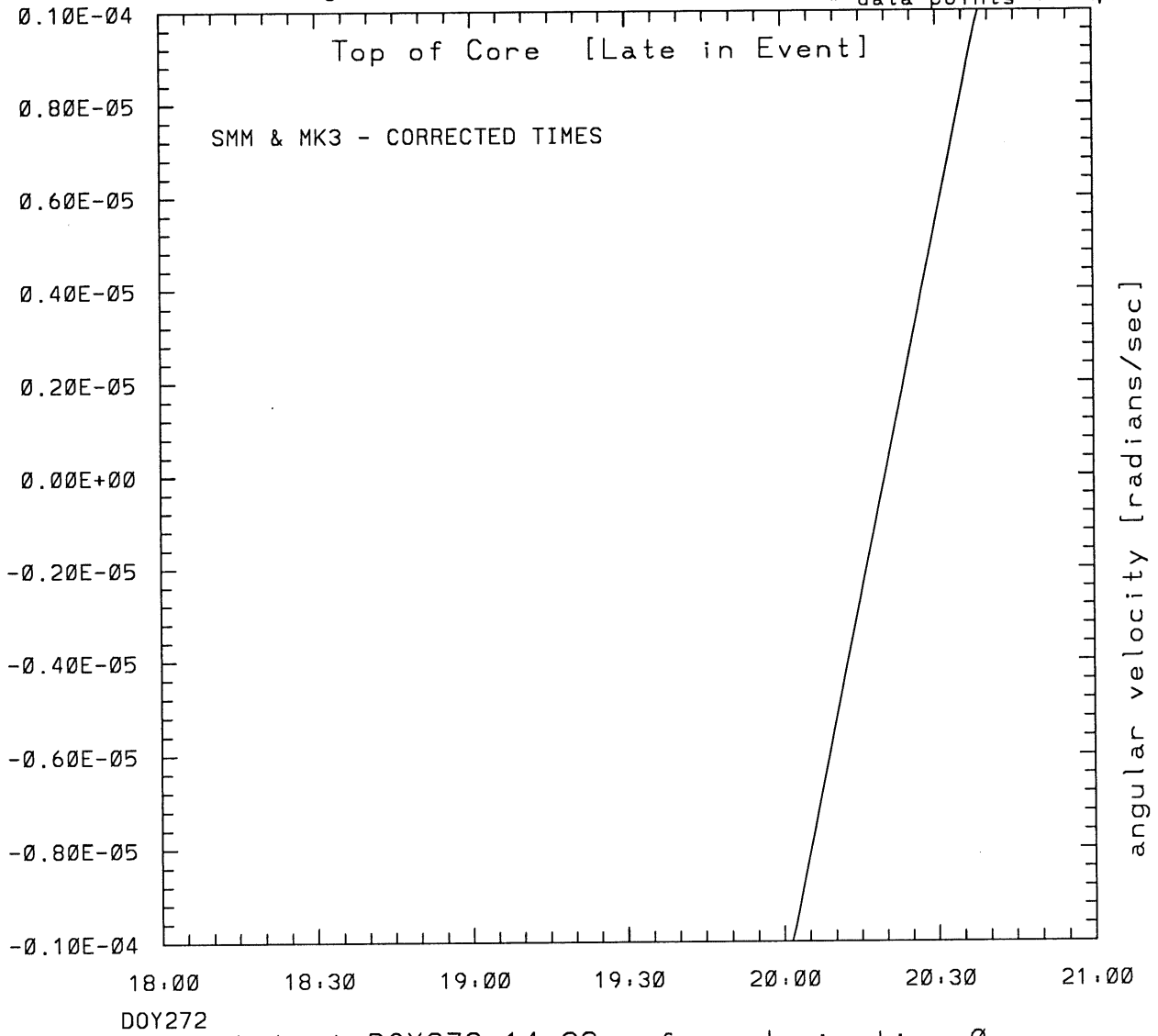


tstart=DOY272 14:38 from derivative=0  
Event begins at 1.55 Solar Radii  
radial acceleration=0.534E-02 km/sec\*\*2

SMM C/P 1989 DOY272 54 +/- 4 degrees

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

# data points = 4



DOY272

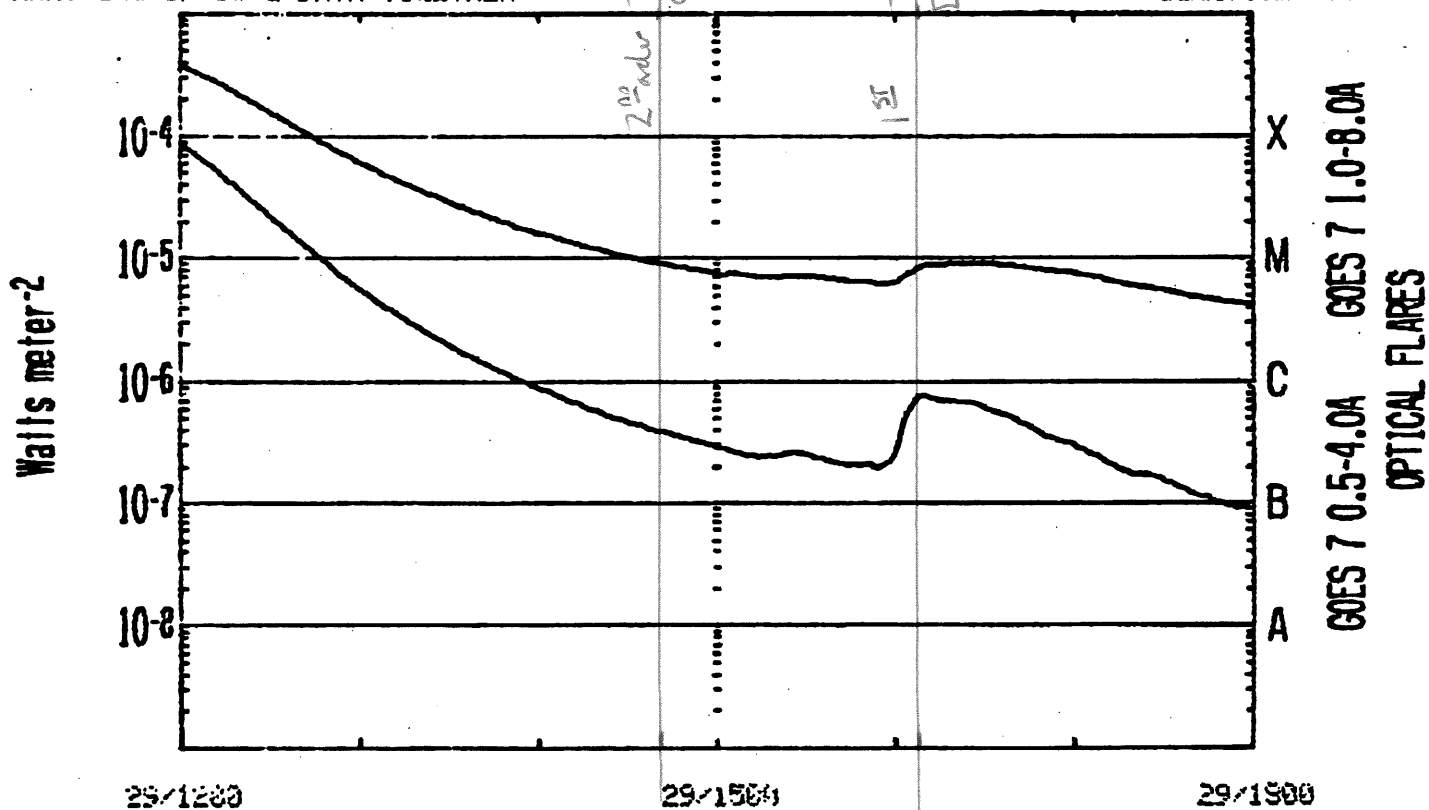
tstart=DOY272 14:38 from derivative=0

angular acceleration=0.915E-08 +/-  
0.273E-08 [rad/sec\*\*2]

1989 007 272

RAY and OPTICAL DATA TOGETHER

BEGIN: 29 SEP 89



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

SAA's  
NIGHT  
RUN: 1524UT  
4 OCT 89

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

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

year	day	time	radii	radius	error in angle	error in angle	datatype
1989	272	18:51: 3	2.44 +/-	0.15	58.5 +/-	0.5	SMM
1989	272	19:15:49	2.63 +/-	0.15	54.5 +/-	0.5	SMM
1989	272	20:22:47	3.20 +/-	0.10	52.0 +/-	1.0	SMM
1989	272	20:47:33	3.45 +/-	0.15	51.0 +/-	1.0	SMM

\*\*\*\*\*  
Structure being measured:  
Top of Core [Late in Event]  
\*\*\*\*\*

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

START TIME:

Event began at  $t = 0 + -0.115E+03 +/- 0.169E+01$  [minutes]  
In more convenient units:  
Event began at DOY 272 16: 5 +/- 0.169E+01 [minutes]

Origin defined at DOY272 18: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 99. +/- 2. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.199E+01 +/- 0.254E-01 [solar radii]  
c(2) = 0.857E-02 +/- 0.203E-03 [radii/min]  
c(2) = 0.994E+02 +/- 0.236E+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)= 0.28598E-01 [radii] see Bevington pg. 114  
error in c(2)= 0.23995E-03 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = -0.1832E-04 +/- 0.4951E-05 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 61. +/- 2. [degrees]  
a(2) = -0.630E-01 +/- 0.170E-01 [degrees/min]  
a(2) = -0.183E-04 +/- 0.495E-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 18:51 = 99. km/sec

The RADIAL velocity at 19:15 = 99. km/sec

The RADIAL velocity at 20:22 = 99. km/sec



The RADIAL velocity at 20:47 = 99. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.47  
Standard Deviation in start time measurement = 0.475E+02  
Error in time = 0.37623E+01 using best fit method  
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.317E-03  
Reduced Chi Squared = 0.165E-02  
Chi Squared = 0.330E-02  
The probability for exceeding chi square = 0.100E+01

The correlation coefficient = 0.999E+00  
The probability that no LINEAR correlation exists between the variables = 0.69801  
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	272	18:51: 3	2.44 +/-	0.15	58.5 +/-	0.5	SMM
1989	272	19:15:49	2.63 +/-	0.15	54.5 +/-	0.5	SMM
1989	272	20:22:47	3.20 +/-	0.10	52.0 +/-	1.0	SMM
1989	272	20:47:33	3.45 +/-	0.15	51.0 +/-	1.0	SMM

\*\*\*\*\*  
Structure being measured:  
Top of Core [Late in Event]  
\*\*\*\*\*

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

START TIME:

tstart=DOY272 14:38 from derivative = 0  
Event begins at 1.55 Solar Radii  
Origin defined at DOY272 18: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = 0.534E-02 +/- 0.796E-03 km/sec\*\*2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.212E+01 +/- 0.207E-01 [solar radii]  
c(2) = 0.560E-02 +/- 0.446E-03 [radii/min]  
c(2) = 0.649E+02 +/- 0.517E+01 [km/sec]  
c(3) = 0.138E-04 +/- 0.206E-05 [radii/min\*\*2]  
c(3) = 0.534E-02 +/- 0.796E-03 [km/sec\*\*2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in c(1) = 0.30425E-01 [radii] Bevington pg 154 (8-30)  
Exact error in c(1) = 0.12413E-01 [radii] Bevington pg 154 (8-28)  
Approximate error in c(2) = 0.66246E-03 [radii/min] Bevington pg 154 (8-30)  
Exact error in c(2) = 0.28000E-03 [radii/min] Bevington pg 154 (8-28)  
Approximate error in c(3) = 0.30125E-05 [radii/min\*\*2] Bevington pg 154 (8-30)  
Exact error in c(3) = 0.13086E-05 [radii/min\*\*2] Bevington pg 154 (8-28)

ANGULAR INFORMATION:

ANGULAR ACCELERATION= 0.9147E-08 +/- 0.2731E-08[radians/sec\*\*2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 69. +/- 3. [degrees]  
a(2) = -0.264E+00 +/- 0.605E-01 [degrees/min]  
a(2) = -0.768E-04 +/- 0.176E-04 [rad/sec]  
a(3) = 0.943E-03 +/- 0.282E-03 [degrees/min\*\*2]  
a(3) = 0.915E-08 +/- 0.273E-08 [rad/sec\*\*2]

The RADIAL velocity at 18:51 = 81. km/sec

The RADIAL velocity at 19:15 = 89. km/sec

The RADIAL velocity at 20:22 = 111. km/sec

The RADIAL velocity at 20:47 = 119. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.47

Standard Deviation in start time measurement = 0.475E+02

Value of reduced Chi Squared returned from nllst2 = 0.202E-04

Reduced Chi Squared = 0.107E-03

Chi Squared = 0.107E-03

The probability for exceeding chi square = 0.996E+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 = 0.9374E+00

The correlation between the data and the time\*\*2 term = 0.9167E+00

The correlation between the data and the complete equation of motion=0.1000E+01

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