

1989 DOY 006

MKIII: 39 images

Event in southeast: 18:04 - 18:14

Loop with cavity [core?].

Width of Loop: 34 degrees wide.

Center of Outer Bright Loop: 132 degrees pa.

PMON:

MLSO reports coronal depletion

around a prominence at 130 degrees pa.

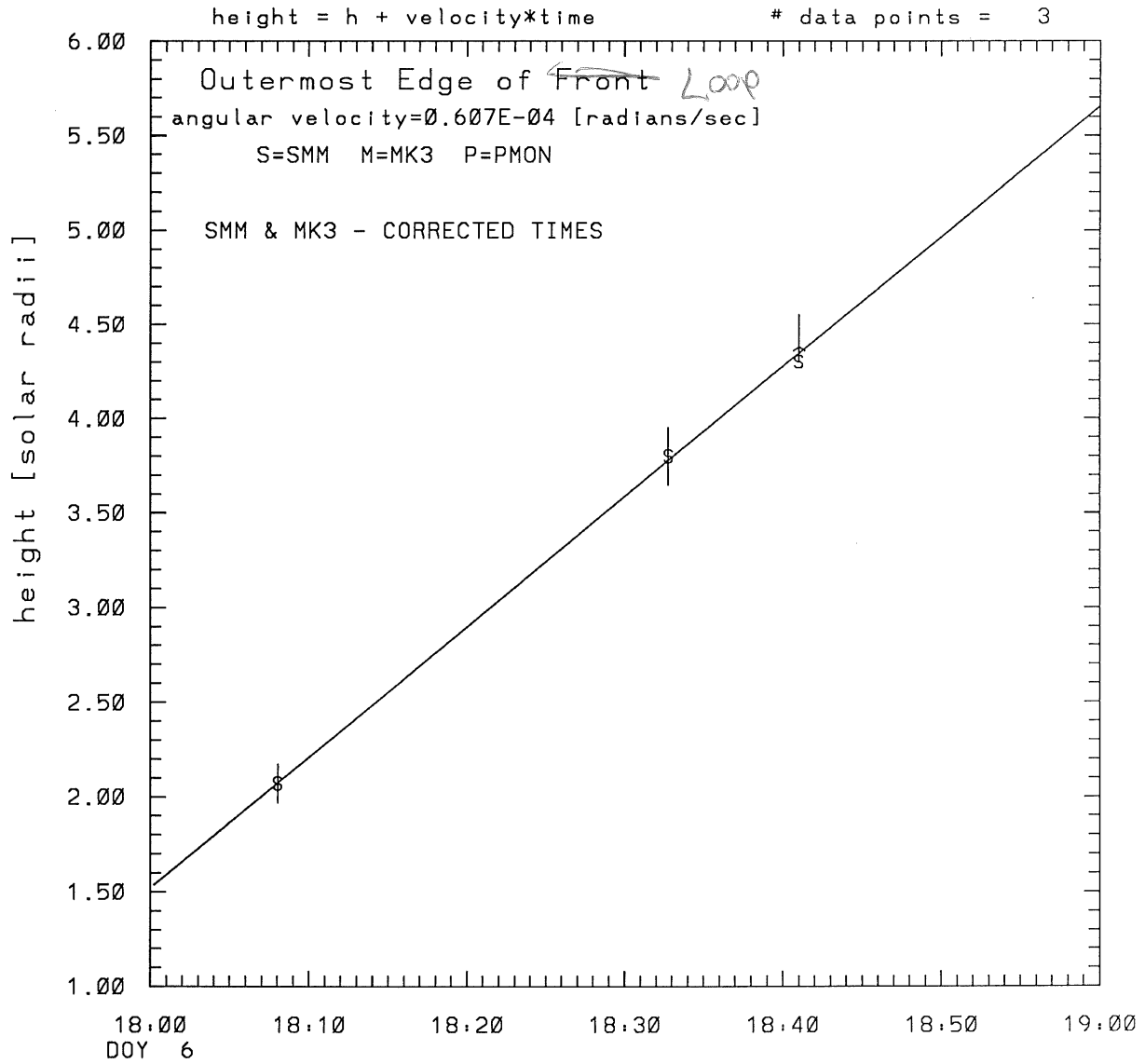
Needs to be digitized.

SMM:

The event begins as a bright loop in the image at 18:08 [corrected time]. In the next two images the CME has a fuzzy outer edge and a brighter inner edge. It now appears as a filled mound or tongue. We measured both the fuzzy outer front and sharper inner front.

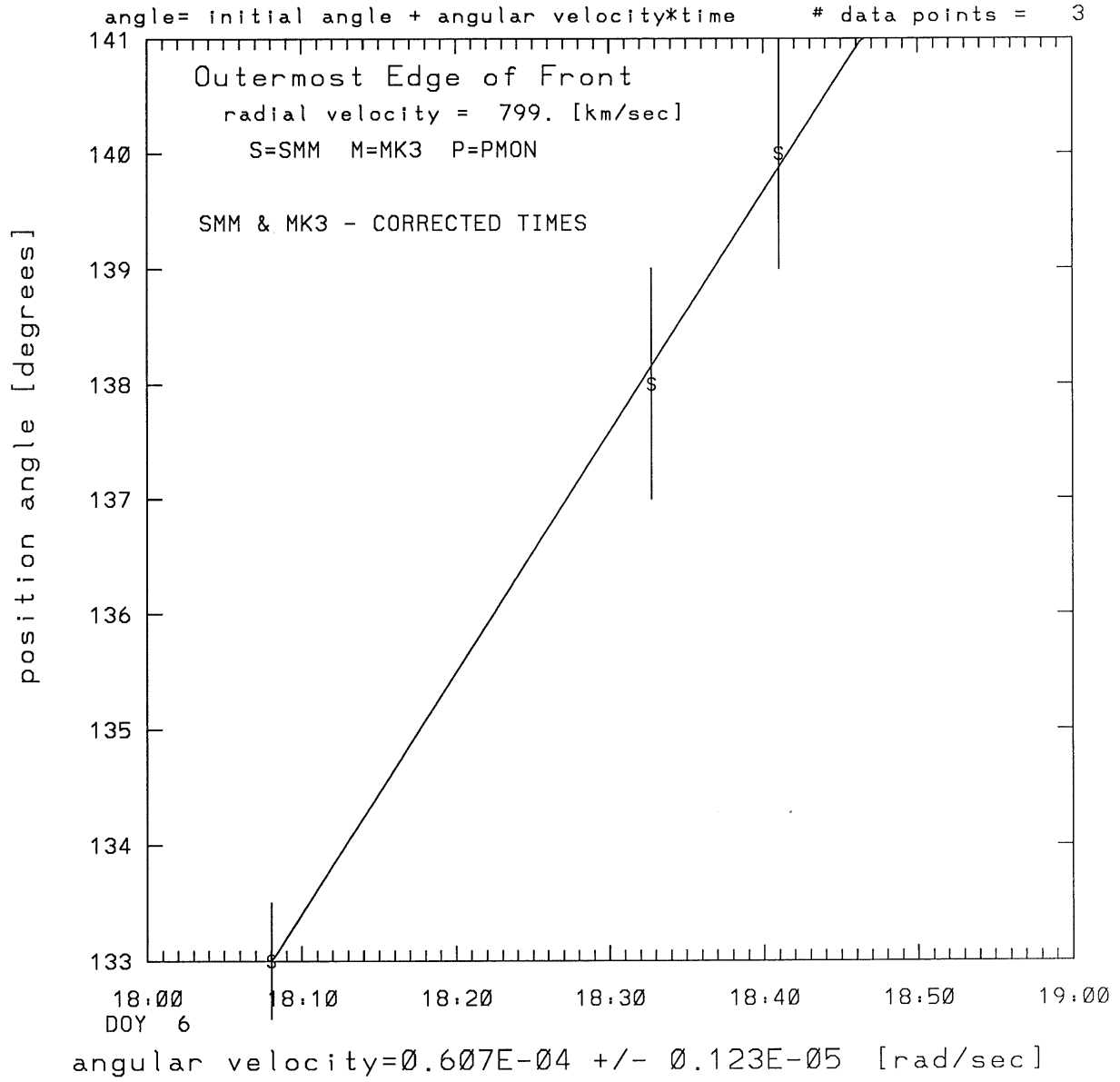
**SEE MKIII/SMM
1989 COMPOSITE
NOTEBOOK
FOR ADDITIONAL
TRAJECTORIES**

SMM C/P 1989 DOY 6 137 +/- 4 degrees

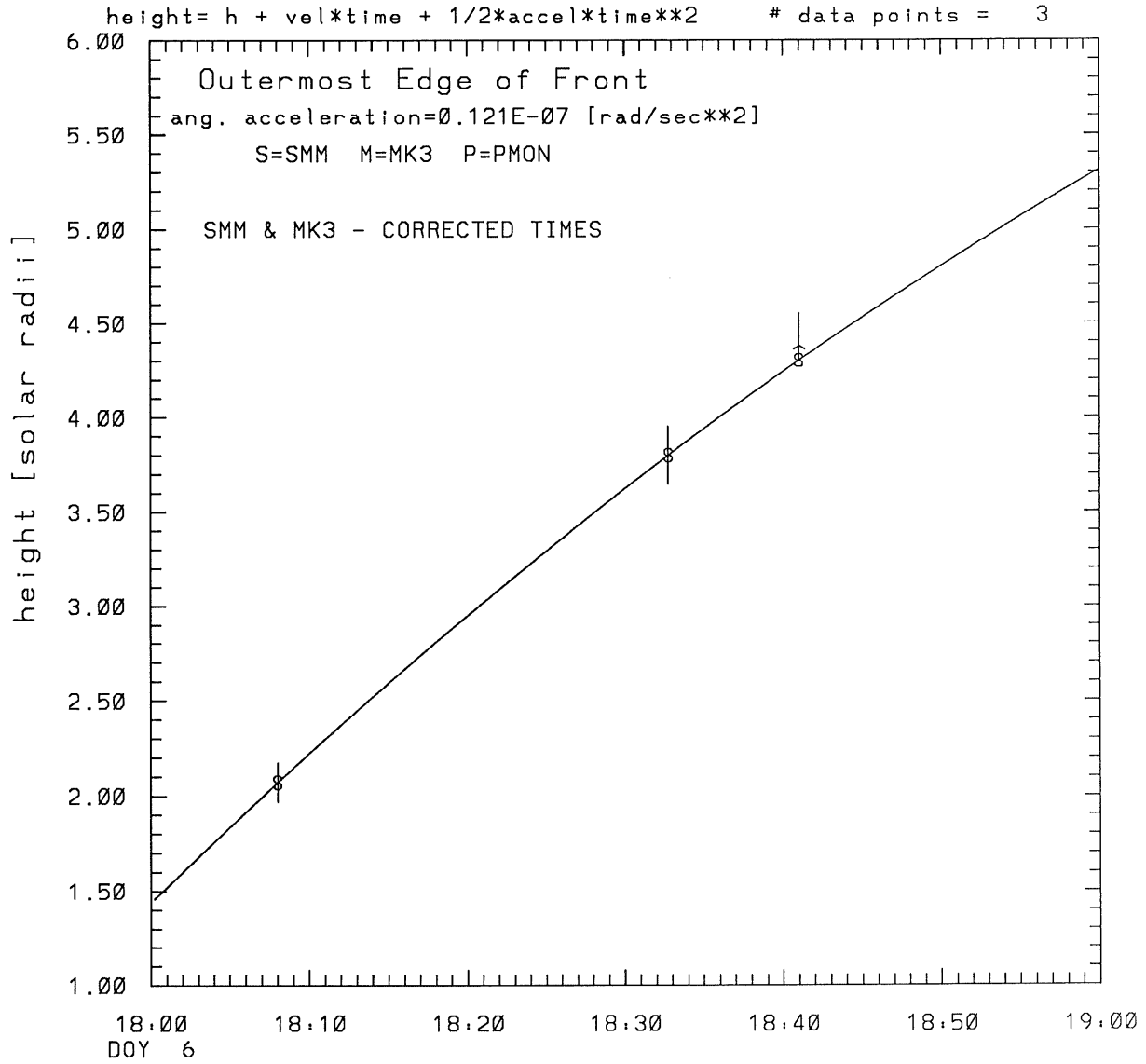


tstart=DOY 6 17:54 +/- 0.1 [min.]
radial velocity= 799. +/- 11. [km/sec]

SMM C/P 1989 DOY 6 137 +/- 4 degrees



SMM C/P 1989 DOY 6 137 +/- 4 degrees



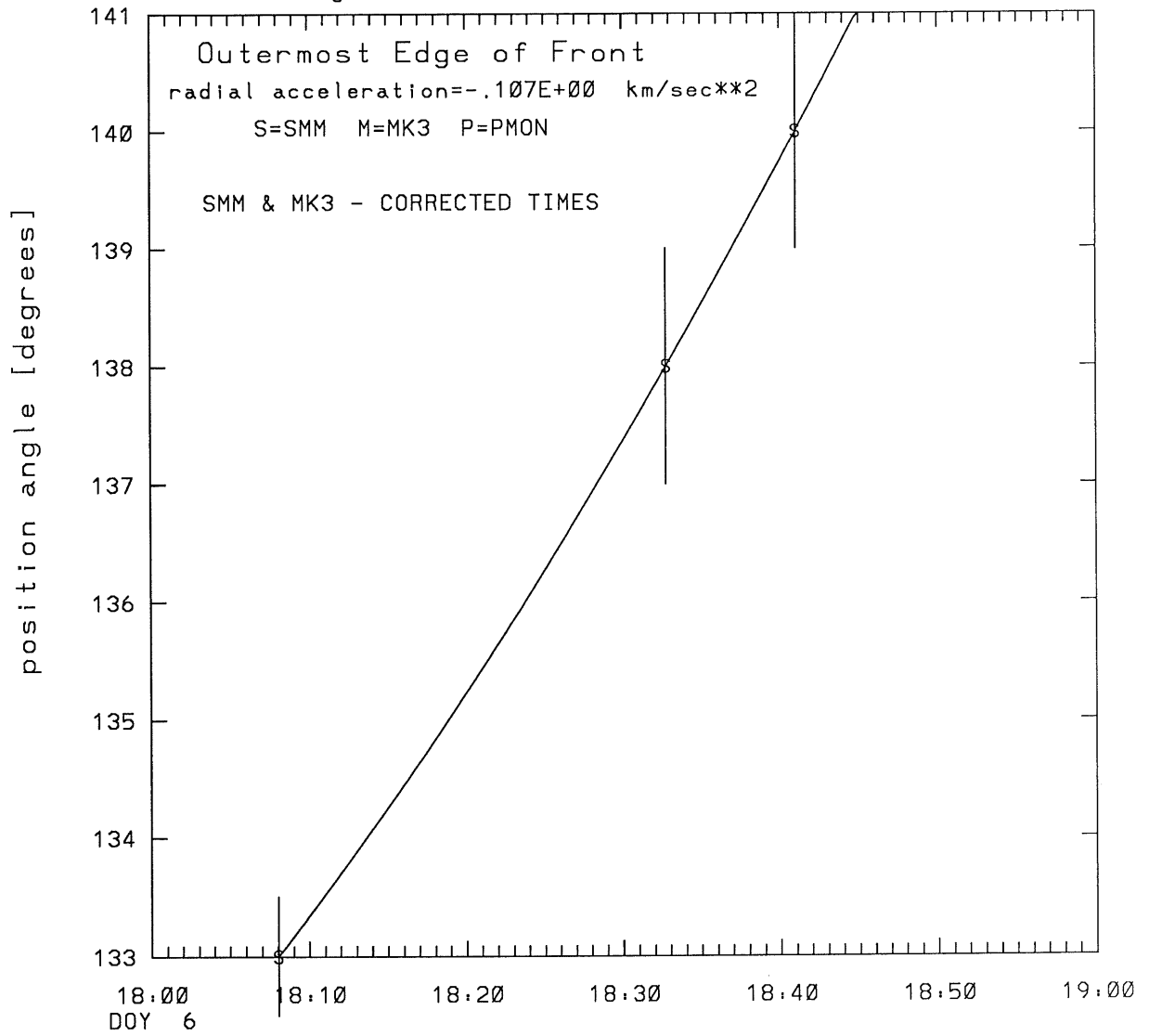
tstart = DOY 6 17:55 +/- 0.0 [min.]

radial acceleration = $-0.1069 +/- 0.0000$ [km/sec**2]

SMM C/P 1989 DOY 6 137 +/- 4 degrees

angle = initial angle + angular velocity*time
+ 1/2 angular acceleration*time**2

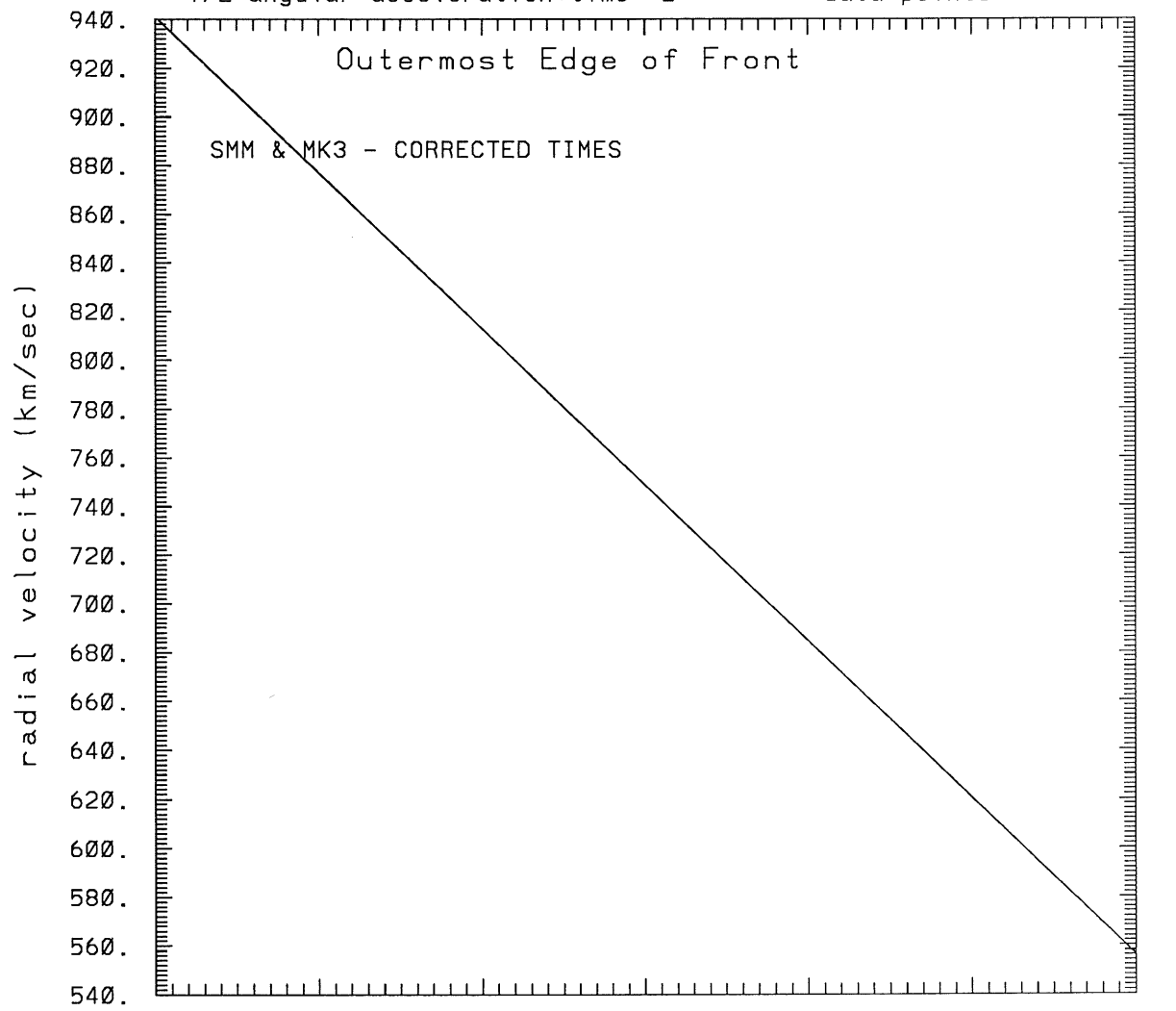
data points = 3



angular acceleration = $0.121E-07 \pm 0.645E-12$ [rad/sec**2]

SMM C/P 1989 DOY 6 137 +/- 4 degrees

+ 1/2 angular acceleration*time**2 # data points = 3



DOY 6

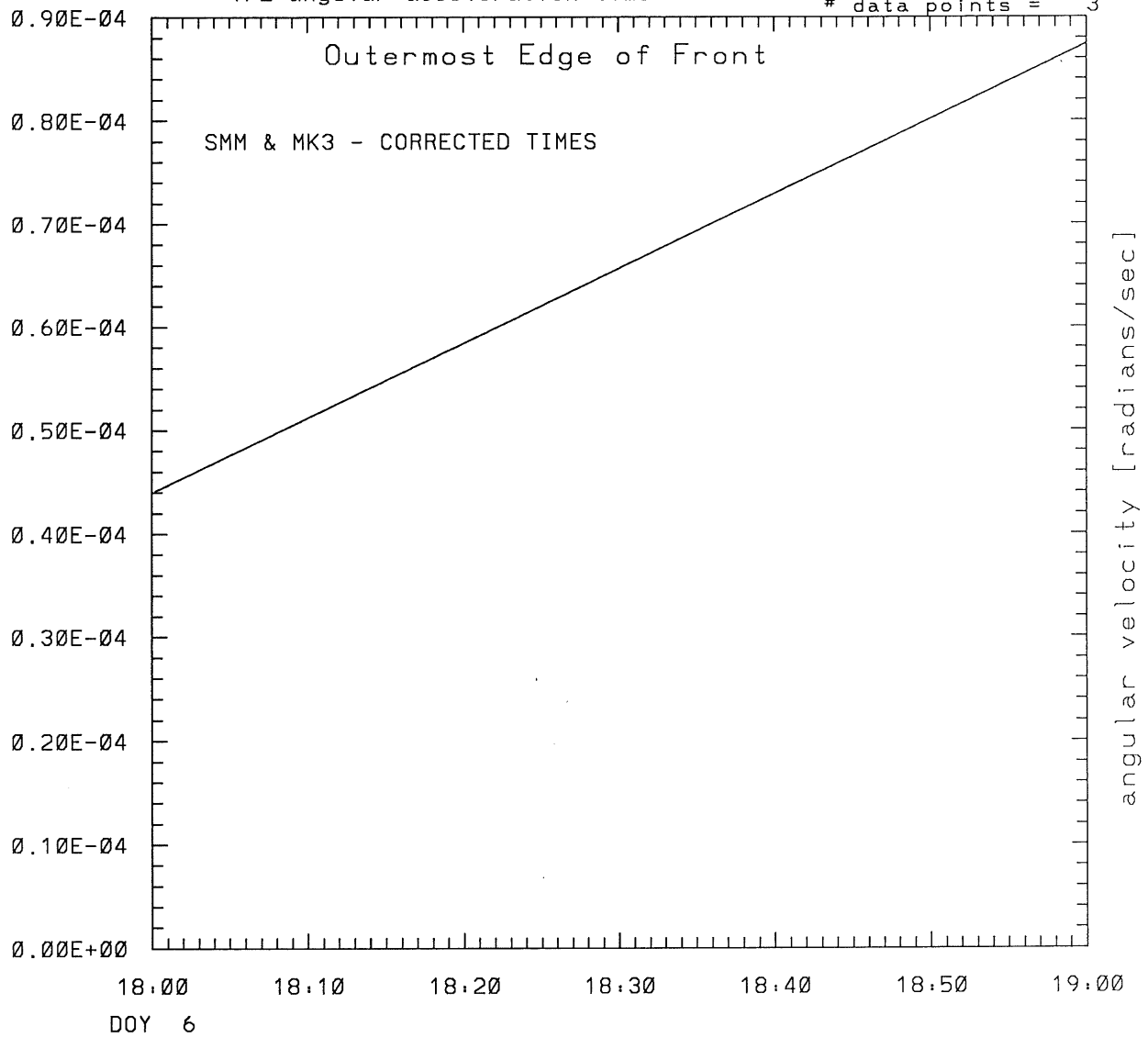
tstart=DOY 6 17:55 +/- 0.0 [min.]

radial acceleration=-.107E+00 km/sec**2

SMM C/P 1989 DOY 6 137 +/- 4 degrees

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

data points = 3



angular acceleration = $0.121E-07 \pm 0.645E-12$ [rad/sec**2]

RAY and OPTICAL DATA TOGETHER

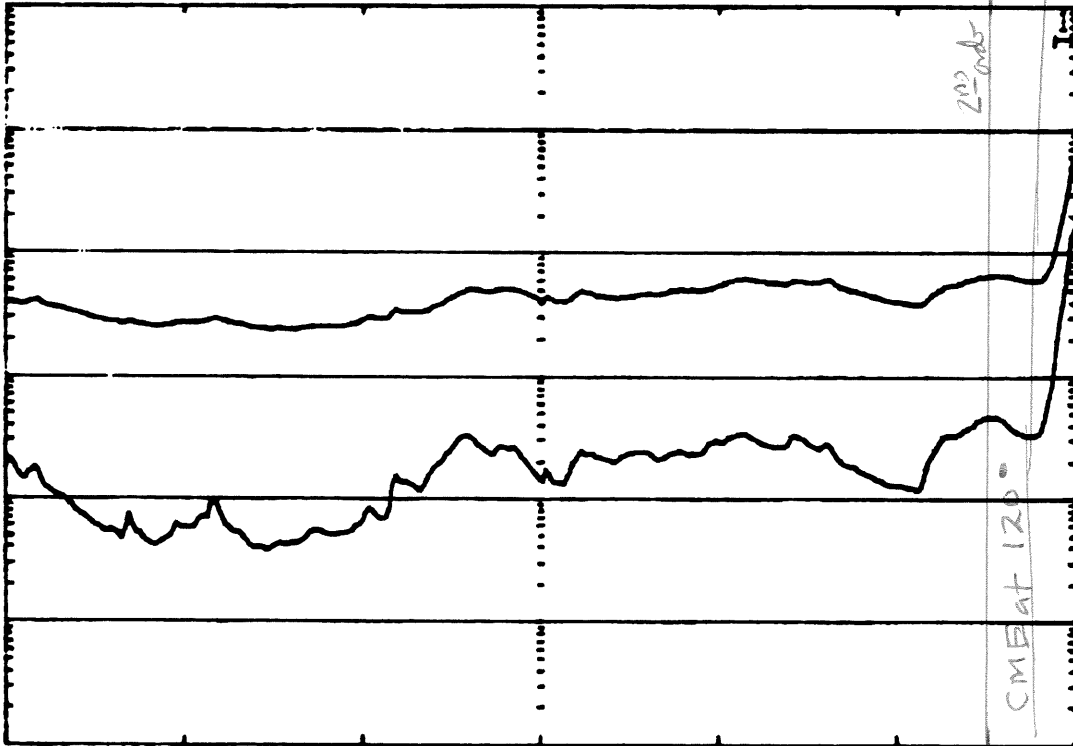
STOP
Ret..

BEGIN: 06 JAN 89

14,5312 S30E72
14,5311 S13E57

Watts meter²

10⁻⁴
10⁻⁵
10⁻⁶
10⁻⁷
10⁻⁸



06/1200

06/1500

06/1800

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

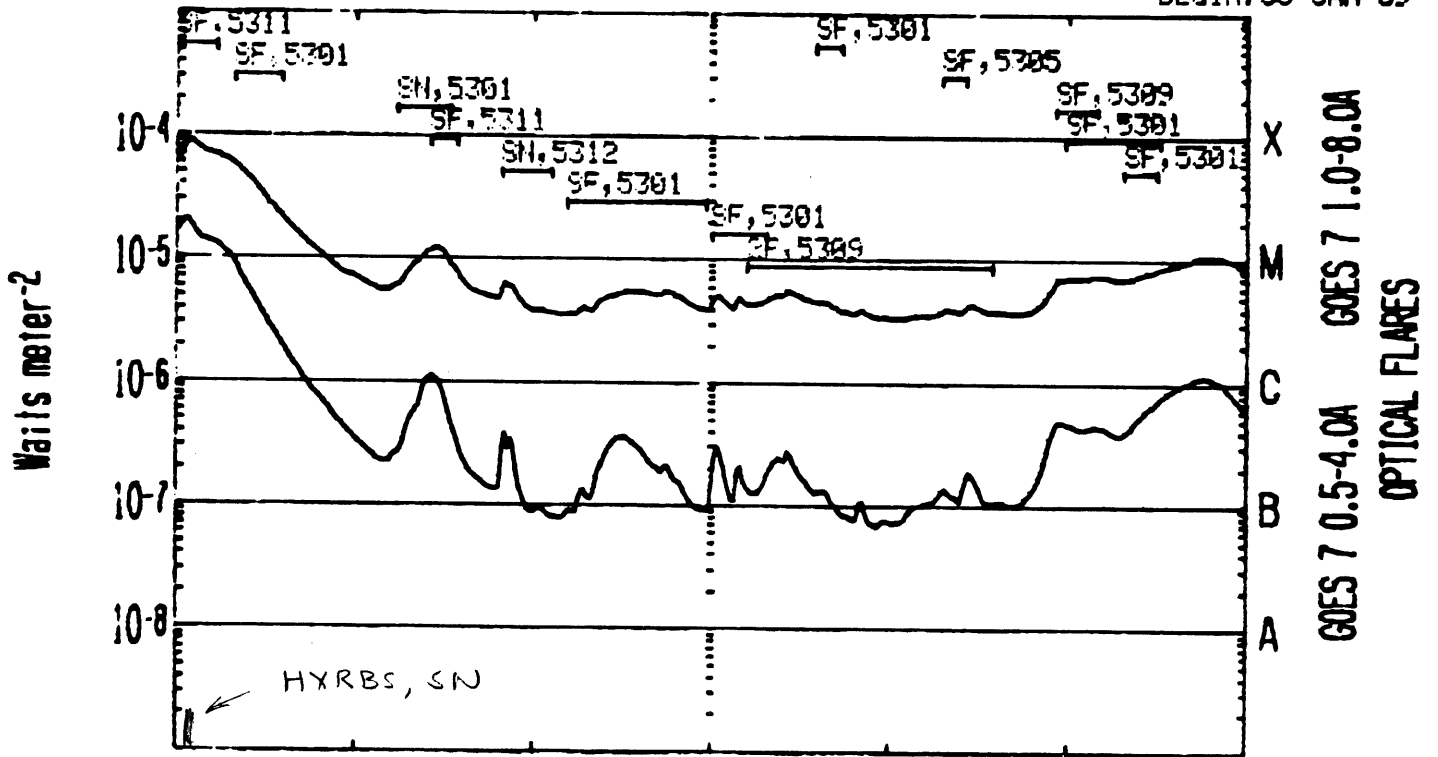
OPTICAL FLARES

SAA's
NIGHT

GOES-7 1 MIN DATA: OPTICAL FLARE DUR. IMP. REGION

RUN: 1557UT
9 JAN 89

ARRAY and OPTICAL DATA TOGETHER STOP Ret.. BEGIN: 06 JAN 89



06/1989
X-RAY
MAR 18:05

06/2100

07-0000

SAA's
NIGHT

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

RUN: 1500UT
3 JAN 89

This is a 1 order run

INPUT:

year	day	time	radii	radius	error in angle	error in angle	datatype	
1989	6	18: 8: 1	2.07 +/-	0.10	133.0 +/-	0.5	SMM	
1989	6	18:32:47	3.80 +/-	0.15	138.0 +/-	1.0	SMM	
1989	6	18:41: 1	4.30 +/-	0.25	140.0 +/-	1.0	SMM	THIS POINT IS A LOI <i>lower limit</i>

Structure being measured:
Outermost Edge of Loop

OUTPUT:

START TIME:

Event began at t = 0 + -0.755E+01 +/- 0.883E-01 [minutes]
In more convenient units:
Event began at DOY 6 17:54 +/- 0.883E-01 [minutes]

Origin defined at DOY 6 18: 0

RADIAL INFORMATION:

RADIAL VELOCITY = 799. +/- 11. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.152E+01 +/- 0.221E-01 [solar radii]
c(2) = 0.689E-01 +/- 0.984E-03 [radii/min]
c(2) = 0.799E+03 +/- 0.114E+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) = 0.63552E-01 [radii] see Bevington pg. 114
error in c(2) = 0.20723E-02 [radii/min] see Bevington pg. 114

ANGULAR INFORMATION:

ANGULAR VELOCITY = 0.6073E-04 +/- 0.1226E-05 [radians/sec]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 131. +/- 0. [degrees]
a(2) = 0.209E+00 +/- 0.421E-02 [degrees/min]
a(2) = 0.607E-04 +/- 0.123E-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 18: 8 = 87. km /sec

The RADIAL velocity at 18: 8 = 799. km/sec

The TOTAL velocity at 18: 8 = 804. km/sec

The TANGENTIAL velocity at 18:32 = 160. km /sec

The RADIAL velocity at 18:32 = 799. km/sec

The TOTAL velocity at 18:32 = 815. km/sec

The TANGENTIAL velocity at 18:41 = 181. km /sec

The RADIAL velocity at 18:41 = 799. km/sec

The TOTAL velocity at 18:41 = 819. km/sec

The following info is for estimating goodness of the fit

Fit is ok [ier=1]

Standard Deviation in the height = 1.17

Standard Deviation in start time measurement = 0.140E+02

Error in time = 0.73087E+00 using best fit method

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

Value of reduced Chi Squared returned from nllst2 = 0.509E-03

Reduced Chi Squared = 0.712E-02

Chi Squared = 0.712E-02

The probability for exceeding chi square = 0.982E+00

The correlation coefficient = 0.100E+01

The probability that no LINEAR correlation exists between the variables = 0.17001

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	
1989	6	18: 8: 1	2.07 +/-	0.10	133.0 +/-	0.5	SMM	
1989	6	18:32:47	3.80 +/-	0.15	138.0 +/-	1.0	SMM	
1989	6	18:41: 1	4.30 +/-	0.25	140.0 +/-	1.0	SMM	THIS POINT IS A LOI

Structure being measured:
Outermost Edge of Loop

OUTPUT:

START TIME:

Event began at t = 0 + -0.530E+01 +/- 0.000E+00 [minutes]
In more convenient units:
Event began at DOY 6 17:55 +/- 0.000E+00 [minutes]
Origin defined at DOY 6 18: 0

RADIAL INFORMATION:

RADIAL ACCELERATION = -0.107E+00 +/- 0.196E-05 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

c(1) = 0.144E+01 +/- 0.162E-05 [solar radii]
c(2) = 0.811E-01 +/- 0.226E-06 [radii/min]
c(2) = 0.941E+03 +/- 0.262E-02 [km/sec]
c(3) = -0.276E-03 +/- 0.506E-08 [radii/min**2]
c(3) = -0.107E+00 +/- 0.196E-05 [km/sec**2]

ANGULAR INFORMATION:

ANGULAR ACCELERATION= 0.1206E-07 +/- 0.6447E-12[radians/sec**2]

The computed ANGULAR coefficients and errors FROM NLLST2 are:

a(1) = 132. +/- 0. [degrees]
a(2) = 0.151E+00 +/- 0.310E-05 [degrees/min]
a(2) = 0.440E-04 +/- 0.901E-09 [rad/sec]
a(3) = 0.124E-02 +/- 0.665E-07 [degrees/min**2]
a(3) = 0.121E-07 +/- 0.645E-12 [rad/sec**2]

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

The TANGENTIAL velocity at 18: 8 = 72. km /sec
The RADIAL velocity at 18: 8 = 890. km/sec

The TOTAL velocity at 18: 8 = 893. km/sec

The TANGENTIAL velocity at 18:32 = 179. km /sec
The RADIAL velocity at 18:32 = 731. km/sec

The TOTAL velocity at 18:32 = 752. km/sec

The TANGENTIAL velocity at 18:41 = 220. km /sec

The RADIAL velocity at 18:41 = 678. km/sec

The TOTAL velocity at 18:41 = 713. 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!