SMM C/P 1980 DOY103 250 +/- 0 degrees

height = h + velocity*time   # data points = 4

Top of Front Tongue

S=SMM M=MK3 P=PMON

SMM & MK3 - CORRECTED TIMES

height [solar radii]

6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00

21:30   21:40   21:50   22:00   22:10   22:20   22:30
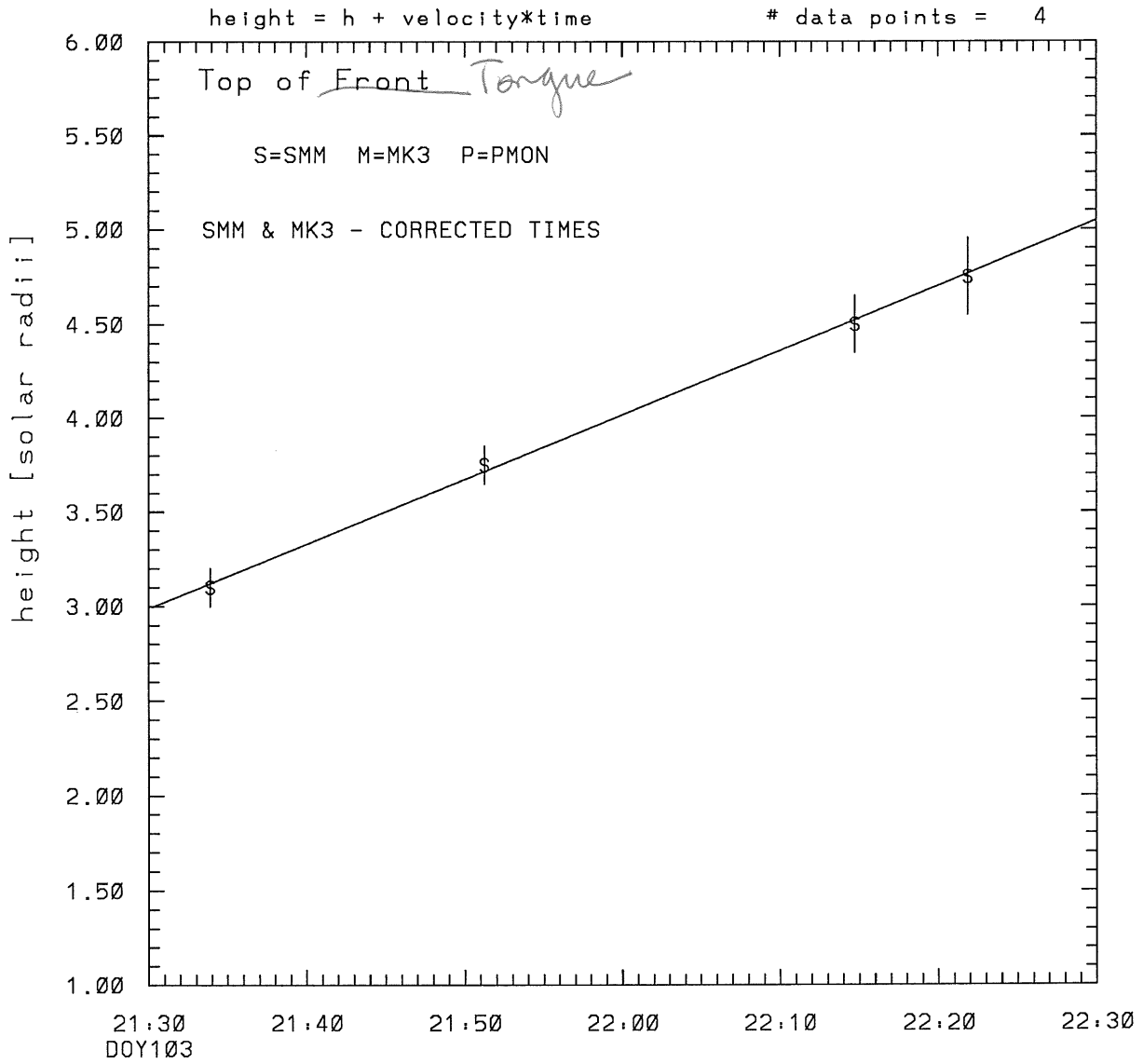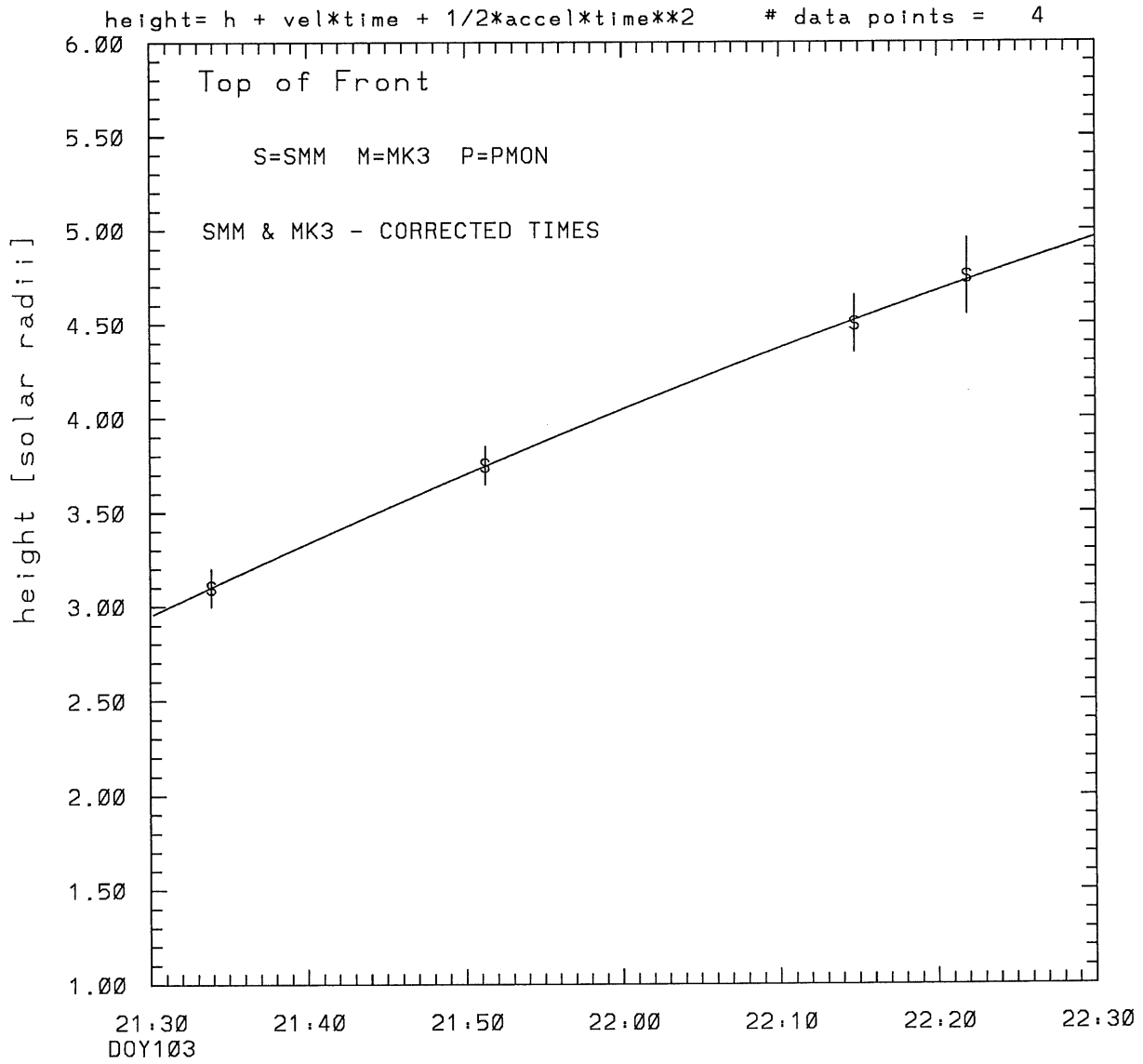DOY103

tstart=DOY103 20:34 +/-   0.7 [min.]
radial velocity= 398. +/- 10. [km/sec]

SMM C/P 1980 DOY103 250 +/- 0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points = 4

Top of Front

S=SMM M=MK3 P=PMON

SMM & MK3 - CORRECTED TIMES

height [solar radii]

6.00
5.50
5.00
4.50
4.00
3.50
3.00
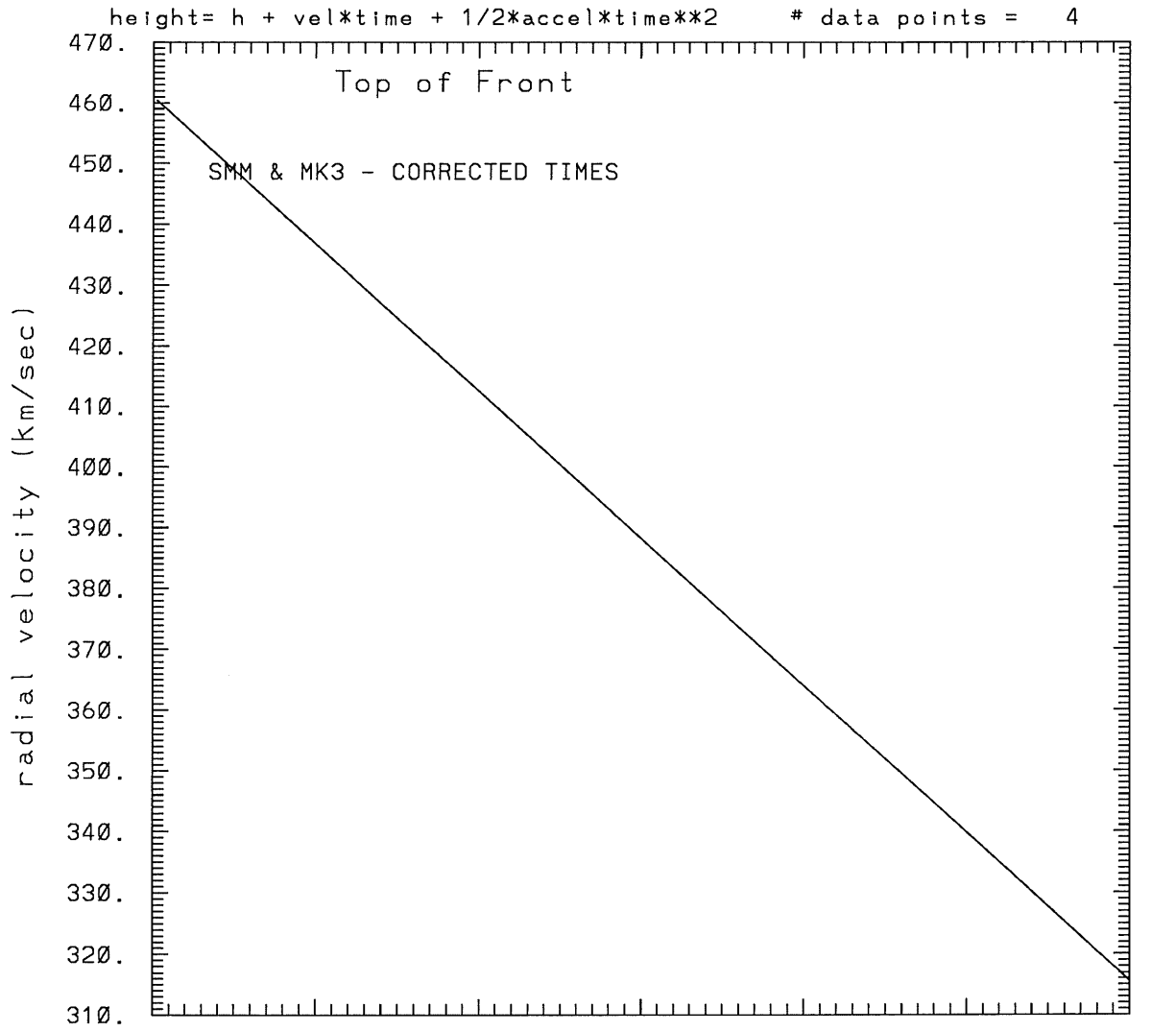2.50
2.00
1.50
1.00

21:30   21:40   21:50   22:00   22:10   22:20   22:30
DOY103

tstart=DOY103 20:48 +/-   6.2 [min.]

radial acceleration=-0.0404 +/- 0.0118 [km/sec**2]

SMM C/P   1980 DOY103   250 +/-   0 degrees

height= h + vel*time + 1/2*accel*time**2   # data points =   4

Top of Front

SMM & MK3 - CORRECTED TIMES

radial velocity (km/sec)

470.
460.
450.
440.
430.
420.
410.
400.
390.
380.
370.
360.
350.
340.
330.
320.
310.

21:30   21:40   21:50   22:00   22:10   22:20   22:30
DOY103

tstart=DOY103 20:48 +/-   6.2 [min.]

radial acceleration=-.404E-01   km/sec**2

```
********************
 This is a 1 order run
********************


*******
 INPUT:
*******


                       error in        error in
year doy   time    radii  radius    angle  angle   datatype
1980 103  21:33:53  3.10 +/- 0.10   250.0 +/- 1.0     SMM
1980 103  21:51:14  3.75 +/- 0.10   250.0 +/- 1.0     SMM
1980 103  22:14:45  4.50 +/- 0.15   250.0 +/- 1.0     SMM
1980 103  22:21:52  4.75 +/- 0.20   250.0 +/- 1.0     SMM


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


********
 OUTPUT:
********
```

START TIME:

Event began at t = 0 + -0.579E+02 +/- 0.681E+00 [minutes]
In more convenient units:
Event began at DOY 103 20:34 +/- 0.681E+00 [minutes]

Origin defined at DOY103 21:30

RADIAL INFORMATION:

RADIAL VELOCITY = 398. +/-   10. km/sec

The computed RADIAL coefficients and errors FROM NLLST2 are:

```
c(1) =   0.299E+01 +/-   0.246E-01 [solar radii]
c(2) =   0.343E-01 +/-   0.898E-03 [radii/min]
c(2) =   0.398E+03 +/-   0.104E+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)= 0.32353E-01 [radii] see Bevington pg. 114
error in c(2)= 0.90089E-03 [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) = 250. +/-   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 21:33 = 0.000E+00 km/sec
The TOTAL velocity at 21:33 = 398. km/sec

The TANGENTIAL velocity at 21:51 = 0.000E+00 km/sec
The TOTAL velocity at 21:51 = 398. km/sec

The TANGENTIAL velocity at 22:14 = 0.000E+00 km/sec
The TOTAL velocity at 22:14 = 398. km/sec

The TANGENTIAL velocity at 22:21 = 0.000E+00 km/sec
The TOTAL velocity at 22:21 = 398. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.75
Standard Deviation in start time measurement =   0.191E+02
Error in time =   0.14164E+01 using best fit method
See Taylor Error Analysis [Univ of Colorado] pg.78

Value of reduced Chi Squared returned from nllst2 = 0.935E-03
Reduced Chi Squared = 0.266E-02
Chi Squared = 0.532E-02
The probability for exceeding chi square = 0.999E+00

The correlation coefficient =   0.999E+00
The probability that no LINEAR correlation exists between the variables =   0.6173E-03
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]

```
********************
This is a 2 order run
********************
```

```
*******
INPUT:
*******
```

year doy	time	radii	error in radius	angle	error in angle	datatype
1980 103	21:33:53	3.10	+/- 0.10	250.0	+/- 1.0	SMM
1980 103	21:51:14	3.75	+/- 0.10	250.0	+/- 1.0	SMM
1980 103	22:14:45	4.50	+/- 0.15	250.0	+/- 1.0	SMM
1980 103	22:21:52	4.75	+/- 0.20	250.0	+/- 1.0	SMM

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

```
********
OUTPUT:
********
```

START TIME:

Event began at t = 0 + -0.440E+02 +/- 0.624E+01 [minutes]
In more convenient units:
Event began at DOY 103 20:48 +/- 0.624E+01 [minutes]

Origin defined at DOY103 21:30

RADIAL INFORMATION:

RADIAL ACCELERATION = -0.404E-01 +/- 0.118E-01 km/sec**2

The computed RADIAL coefficients and errors FROM NLLST2 are:

$c(1)$ =   0.295E+01 +/-   0.161E-01 [solar radii]
$c(2)$ =   0.397E-01 +/-   0.165E-02 [radii/min]
$c(2)$ =   0.461E+03 +/-   0.191E+02 [km/sec]
$c(3)$ = -0.104E-03 +/-   0.306E-04 [radii/min**2]
$c(3)$ = -0.404E-01 +/-   0.118E-01 [km/sec**2]

The computed ERRORS in coefficients [BEVINGTON] are:

Approximate error in $c(1)$ = 0.37517E-01 [radii] Bevington pg 154 (8-30)
      Exact error in $c(1)$ = 0.29365E-02 [radii] Bevington pg 154 (8-28)
Approximate error in $c(2)$ = 0.36245E-02 [radii/min] Bevington pg 154 (8-30)
      Exact error in $c(2)$ = 0.58037E-03 [radii/min] Bevington pg 154 (8-28)
Approximate error in $c(3)$ = 0.63094E-04 [radii/min**] Bevington pg 154 (8-30)
      Exact error in $c(3)$ = 0.14749E-04 [radii/min**] 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) = 250. +/- 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 21:33 = 0.000E+00 km/sec
The TOTAL velocity at 21:33 = 452. km/sec

The TANGENTIAL velocity at 21:51 = 0.000E+00 km/sec
The TOTAL velocity at 21:51 = 410. km/sec

The TANGENTIAL velocity at 22:14 = 0.000E+00 km/sec
The TOTAL velocity at 22:14 = 353. km/sec

The TANGENTIAL velocity at 22:21 = 0.000E+00 km/sec
The TOTAL velocity at 22:21 = 335. km/sec

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

Fit is ok [ier=1]

Standard Deviation in the height = 0.75
Standard Deviation in start time measurement = 0.191E+02
Value of reduced Chi Squared returned from nllst2 = 0.205E-03
Reduced Chi Squared = 0.277E-02
Chi Squared = 0.277E-02
The probability for exceeding chi square = 0.989E+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 = 0.1007E+01
The correlation between the data and the time**2 term = 0.9357E+00
The correlation between the data and the complete equation of motion = 0.9988E+00
SEE BEVINGTON "Data Reduction and Error Analysis" [1969]