9 19 1.10 0.40 0.49 ✱

+12°3917 19 21.5 +12 14 809
19 23.7 +12 20
19 25.9 56.0 +12 25.65

ADS 12481; d = 2"
Δm = 5 mag.

4.4
2.2

23 ± 10 VV

G2.0 1.10
−17.2 10cm
−17.4 (1)

−22.0 ± 1.3 0 cm
mag

Yale Zone −.057 −.057
−7 +5

−0.064 −0.052

−053 −035 VVR

−0.064 −0.052

8.8: K8 +7.7

8.12
7.5
−4.0 −5.0 −16.4
1.4

809.000*

19.000*
25.900*
12.000*
26.000*
-0.060*
-0.050*
1.800*
22.909
-16.400

-0.261
-0.665

4.935

-0.225
0.746

-17.390

0.135
-0.040

3.758

50

50

+31.3747 19 19 40.7 42.5 731 41 +31 47 197

Y4652 19 44 42.9 +31 55.04

Δm = 1m 2.5

ASP 48,313.

Van de Kamp

67 V V (24) 7 8

83 M (8) −73 ±2.5 9.72 +1.67

74 ± 4A

W1248

2", cpm, Rel. parallax is the mean for the 2 components.

AJ 50,119 +486 −404

+0.486 −0.404 mR

+473 −410 VVR

478 −403

74 A (28)
83 M (8)
71.5 (24)
65 (24)

A −4.4 1 0 cw

B −2.8 1 0 cw

−2 0.74 +480 −407

pmm +3c 2w

dm2

−10.0 ± 0.8 0 cw

−11.4 ± 1.5 0 cw

9.4 ± 10 + 8.6

2125
664
1488
1560
6320

197.000*

19.000*
44.400*
31.000*
55.000*
0.480*
-0.407*
0.740*
14.060
-2.000

-0.551
-0.385

-6.973

-0.030
0.921

-2.260

-2.932
0.063

-41.345

FD 767

C,14)

189484 19 58.8 -50 11 IR5 II +19.3±0.9

8.33 +1.0 (2.23)

LP 786

7736 754 714

046

10369 -371 CP

351

877 -371 Sp II

365 -370

756 222

642 563 350

Eq 2 6

767 $19^h\ 58.8$ $-50°\ 11'$

HD 189484 +8.33 +1.13 +2.23 K5 V

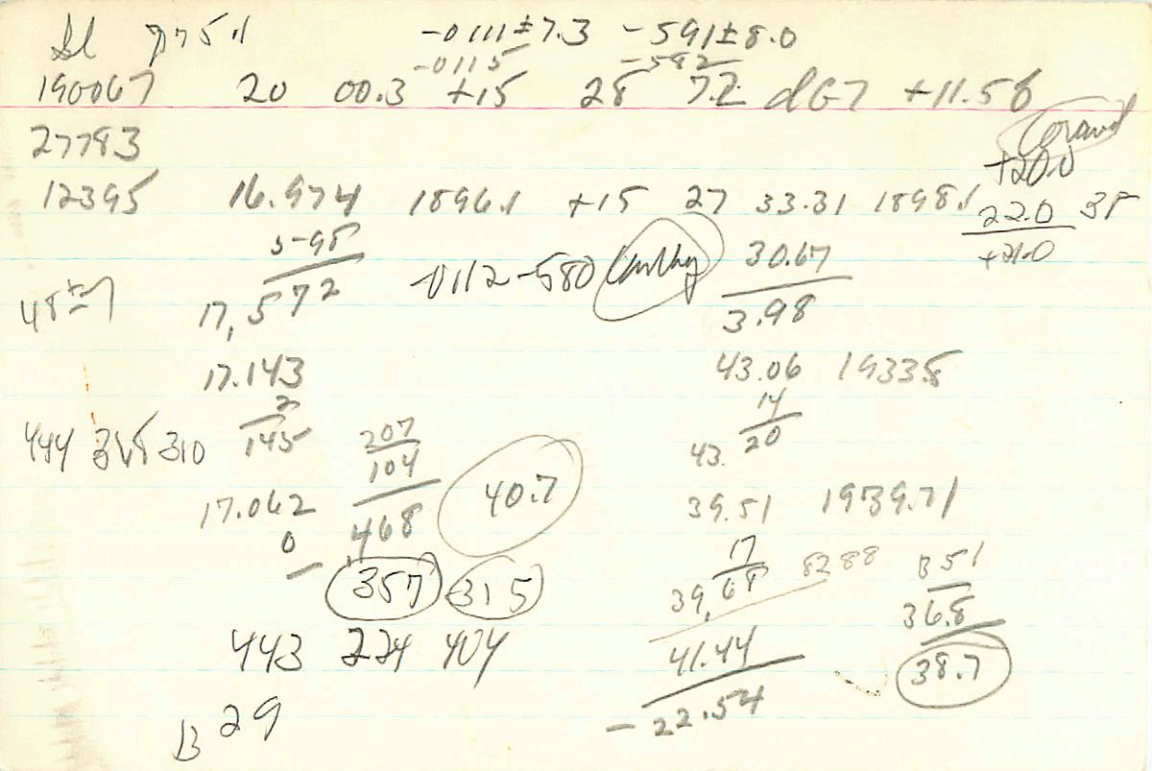
+.491 −.247 −.836
+.205 +.965 −.165
−.847 +.090 −.524

20.000
-50.200
555.800
-371.000
1.700
22
19.300

0.494
-0.245
-0.834
1264.148
11.563

0.202
0.966
-0.165
-1358.536
-32.900

-0.846
0.087
-0.527
-1576.212
-44.651



7670

190360 20 01.6 +29 46 5.7 dB-8 -46.28

27820

1243 +0513 25 -522 26 N30 GC IV

+0518±2.7 -526±2.4

46±6

14.5 72' away

46 A(b) 5.70 +0.72 +0.38 (40.26

46 43 m(B) 5.24 +0.75 -09

46 24

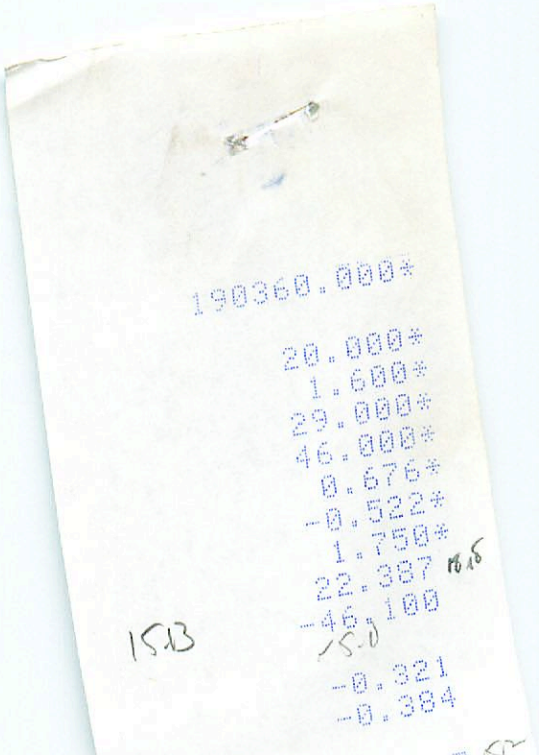
.0515 -524 GC

0517 -5203

6730

M, = 25.40 drum

476-522


190360.000*
20.000*
1.600*
29.000*
46.000*
0.676*
-0.522*
1.750*
22.387
-45.100
-0.321
-0.384

-14°.5652 | 91285

20 1.5 -14 42 329
20 4.1 -14 34
20 6,850.1 -14 25.34

+4781.2

45 M(10)

53
26

Yale zone +0.110 -0.050
-2 +2
+8 +0
+072

MR

+0.111 -0.048

9.7 K8 +7:
+0.048

871
708
585
225

+102 -50 +1.0
2.25

9.80 K2 0.44 0485; (20)

LTT 7483 20 07.3 -21 55

122 -26

5770 5216 2576

M40 +24
28
13.42

4005 -853 -0462
0633
1.20 15.44 0.99
0.46 1318 2541

```
R.A.    :   20.100
DEC.    :  -21.900
PM. R.A.:    0.000
PM. DEC.:    0.000
DISTANCE:    0.000
MODULUS :   10
RAD. VEL.:   0.000

q1 (U)  :    0.513
q2 (U)  :    0.184
q3 (U)  :   -0.838
dU      :    0.000
U       :    0.000

q1 (V)  :    0.185
q2 (V)  :    0.930
q3 (V)  :    0.317
dV      :    0.000
V       :    0.000

q1 (W)  :   -0.838
q2 (W)  :    0.318
q3 (W)  :   -0.443
dW      :    0.000
W       :    0.000
```

E5

R.A. :	20.100
DEC. :	-21.900
PM. R.A. :	0.000
PM. DEC. :	0.000
DISTANCE :	0.000
MODULUS :	10
RAD. VEL. :	0.000
q1 (U) :	0.513
q2 (U) :	0.184
q3 (U) :	-0.838
dU :	0.000
U :	0.000
q1 (V) :	0.185
q2 (V) :	0.930
q3 (V) :	0.317
dV :	0.000
V :	0.000
q1 (W) :	-0.838
q2 (W) :	0.318
q3 (W) :	-0.443
dW :	0.000
W :	0.000

817
+6.04484

20 14.5 +6 47

-531 (1)

9.72 +1.14 +1.08 (2)

+0.44 (3)

-48.5

+26.3915 20 24.1 +26 22 67

20 28.1 7.0 ① +26 DCN 41.16 +15.7 ①

+13?
+15.8 1 ppm

W12811 44877 42m(10)

8.76
8.50

-0.154 -0.132

+30c. 2w dm2

+15.8 1 ppm
+13?
+14.4

20cw 10.4 m2

-17v
-18v

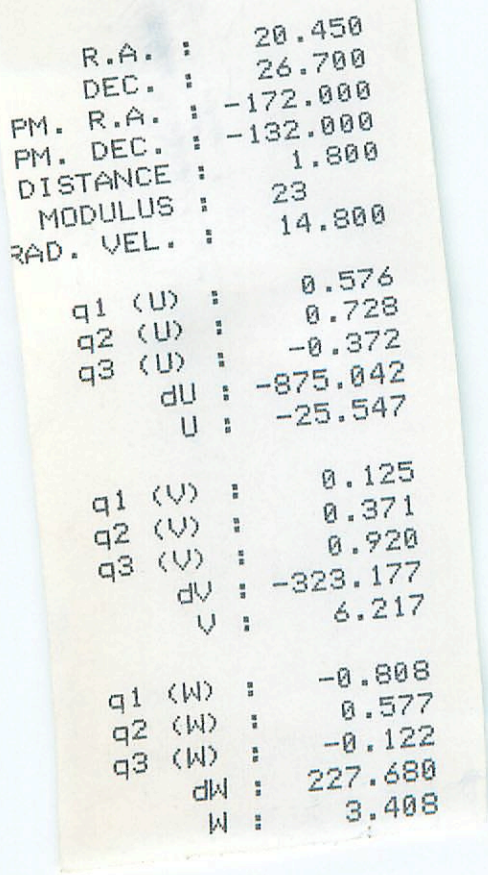
McG-AL -154 -132

1.4

WOZ 9 AB 1959.52 334° 1.30 5 WOZ
AC 1959.56 93° 14.56 2 WOZ

10.0 A
11.4 B
C

M	:	3.408
qM	:	552.980
dp (M)	:	-0.155
d2 (M)	:	0.252
d1 (M)	:	-0.808
V	:	2.512
qV	:	-353.122
dp (V)	:	0.052
d2 (V)	:	0.136
d1 (V)	:	0.152
U	:	-52.245
qU	:	-852.045
dp (U)	:	-0.315
d2 (U)	:	0.257
d1 (U)	:	0.252
GAP. VEL.	:	1.008
MODULUS	:	53
DISTANCE	:	1.008
PM. DEC.	:	-135.000
PM. R.A.	:	-112.500
DEC.	:	52.500
R.A.	:	50.420


R.A. : 20.450
DEC. : 26.700
PM. R.A. : -172.000
PM. DEC. : -132.000
DISTANCE : 1.800
MODULUS : 23
RAD. VEL. : 14.800
q1 (U) : 0.576
q2 (U) : 0.728
q3 (U) : -0.372
dU : -875.042
U : -25.547
q1 (V) : 0.125
q2 (V) : 0.371
q3 (V) : 0.920
dV : -323.177
V : 6.217
q1 (W) : -0.808
q2 (W) : 0.577
q3 (W) : -0.122
dW : 227.680
W : 3.408

+33°5936 7413 20 25.8 +33 17 819

20 27.6 +33 27

20 29.53 +33 36.33

52±10VV

0124 400 2

15700 2

9.11 +1.19

-26.6 2V

-25.5 10LW

-28.1 3 Runs

Mc C-AC +.153 +.007

9.11 K8 +7.5

+006 AC153 9.23 113 1-08 0-4 2

+007 +014 VVR

+145

035

821

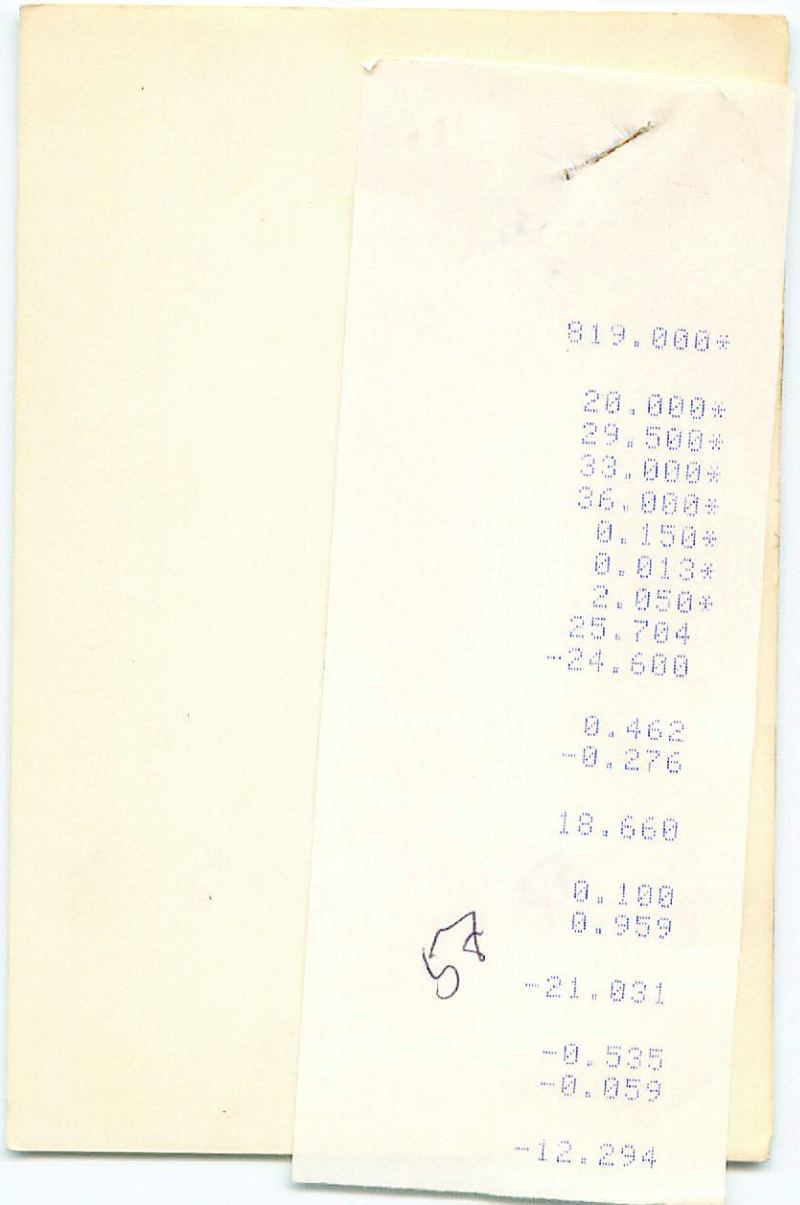
763 078

56 10

+0.153 +0.007

-24.6

+150 +13 2.05



819.000*

20.000*
29.500*
33.000*
36.000*
0.150*
0.013*
2.050*
25.704
-24.600

0.462
-0.276

18.660

0.100
0.959

54

-21.031

-0.535
-0.059

-12.294

W12836 20 29.8 +65 15 10.6 DM3

W CC12N

+24C 24

R ~~RECORDS~~

-024 -202 S(R)

ปัญหา ตัวอย่าง

ตัวอย่าง 1 จงหาค่าของ $\frac{2.01 \times 0.0}{1.5}$ ถึงทศนิยมตำแหน่งที่ 2

วิธีทำ $\frac{2.01 \times 0.0}{1.5} = \frac{0.0}{1.5}$

$= 0.0$

ตอบ 0.0

ตัวอย่าง 2 จงหาค่าของ $\frac{0.0}{1.5}$ ถึงทศนิยมตำแหน่งที่ 2

วิธีทำ $\frac{0.0}{1.5} = \frac{0}{15}$

$= 0$

ตอบ 0

W1298 20 41.1 +35 20 dM3 +42d1W

CC1224

−20δ −55δ R(w)

−31°17815 20 36.0 −31 52 −11.4 824
20 38.9 −31 42
Y4939 20 41.952.2 −31 31.45

W12495 +0.0221 363 Century
+0.0746
W12460461 103Y(12) 107C(7) 101M(12) 284-363 2.8 Cap 333 363 −0.265 −0.34 −7.64 +1.6 OW +5-NW 0.34

+7.06 Cape Mode
+5 Cadmze 5W

Ci 20.1225 +.29 −.34 8.0: Moe +9.8
+0.104

Cpm with 4" pair CO D−32°16'35

+0.255 −0.346 MR
+0.264 −0.354 CR
+0.267 −0.346 CP

+0.263 −0.350

7.78 26.3 −9.4 26.25
−9.2 26.25 −9.2 26.25

9062 −2477 −8423 4340 4588 0486

4366 0324

+12° 4499 20 48.1 +12 36
20 50.3 +12 47
20 52636.7 +12 57.73

45000.1

34 M(4)
48 [illegible]
24 ±18 ho

W13133

7.81 +1.05 +1.05 R

dir.

Yale Zone +.558 +.371
−7 +3

Racin

34 M(4)
46 V(7)
24 Ho(12)

−38.2 10GW

8.9 K8 +7.6
+0.084

40.9 (8) +0.558
40.2 (9) 4yr +562 +374 MR
35.2 (3) 0GW
+0.555 +0.376

Ho Row 384
560 +384 MCR
+374
562

560 375
−350
1.6

780
732
56

574
560 384 VV

375 G

557
381
1.3
384

387
320
304
3

560 +371

827.000*

20.000*
52.600*
12.000*
58.000*
0.560*
0.375*
1.600*
20.893
-35.000
-37.7
2.787
-0.467
25.85
-4.594

1.161
0.816
-6.49
-4.291

60

-1.043
-0.341
-8.53
-9.850

+12°4499 20 52.7 +12 59 dR 5 -32 d w(2)

C(1237

W 13 133

8.81 +1.05 +1.05 R

8.82 +1.03 sss

055 vv

-40.2 2 cygnum

-36.3 DCW

+81 +3 -13 .042

-38.3

+568 +395 vv

+544 +387 AB

552 391

+0.558 +0.371

-5 +3

553 374

-40.95 Ha

-40.1 (2)

128 IV

-35.8

.034-M(10)

576

391

1.9

-383

60

R.A. :	20.850
DEC. :	12.950
PM. R.A. :	575.000
PM. DEC. :	385.000
DISTANCE :	1.250
MODULUS :	18
RAD. VEL. :	-38.800
q1 (U) :	0.642
q2 (U) :	0.605
q3 (U) :	-0.472
dU :	2807.734
U :	68.239
q1 (V) :	0.056
q2 (V) :	0.577
q3 (V) :	0.815
dV :	1201.314
V :	-10.263
q1 (W) :	-0.765
q2 (W) :	0.549
q3 (W) :	-0.336
dW :	%-1029.1
W :	-5.24

+27 +43+43 0324

+27 -21 +23

-31.2 -595 2.055 -1.2 -32.003 -7.110

+55 +321 +3257 1.255 +1041+3434 +407 +3254

827 20 52.6 +12 58

+12°44'49"

8.84 +1.05 +1.04 (2) +0.42 (3)

-35.0

(6)

KAD. JET.
MODULO
DISTANCE
DIM. DEC.
DIM. DEC.

R.A.	:	20.850
DEC.	:	13.000
PM. R.A.	:	566.000
PM. DEC.	:	391.000
DISTANCE	:	1.900
MODULUS	:	24
RAD. VEL.	:	-38.300
q1 (U)	:	0.642
q2 (U)	:	0.605
q3 (U)	:	-0.471
dU	:	2798.681
U	:	85.190
q1 (V)	:	0.056
q2 (V)	:	0.576
q3 (V)	:	0.816
dV	:	1214.030
V	:	-2.115
q1 (W)	:	-0.765
q2 (W)	:	0.550
q3 (W)	:	-0.336
dW	:	-980.789
W	:	-10.677

-22 -0493 ± 8.7 -960 ± 6.1
-13 -0487 -974
199288 20 54.4 -44 19 6.6 dbo -10.1 (17) Coronal
29225 45009.0 527 (10) 43 (17) = 14 -14.0 S/S
13154 Ou 6.50 + 58 GO II -8.2 ± 0.4
(20) 21.857 1899.1 -44 18 32.65 1894.5 -12.0
2.504
30 35 6.
-0490 -967 24.366
-04870 42.504
-5228 40.678
-524-966 23.183
23.065
23.030
0.035
41.2
4.724
22.362
-2.004
21.761
-22
0.689
53.28
39.37
55.05 1926.75
42.90
12.15
1.32
10.83
10.71
8066
40.3
45.8
4801
24.00
44.63
37.20 1953.91
-10
37.30

62

6.52 ±0.10 −0.05 (2) 13

1.24 ±0.21 (3)

608
217
891
3

62

199288.000*

20.000*
54.400*
-44.000*
-19.000*
-0.524*
-0.966*
2.000*
25.119
-8.200

-1.326
-0.757

-27.089

-0.684
-0.044

-117.310

1.853
-0.652

51.893

337281 24b

199288 20 54.4 -44 19 G0 V

GC 29225

HD 81215

6.52 +0.61 -0.05 (2)
6.34 +0.21 (3)

25
608
37
37
37
114

(244) (241) -26 -116 +51 2.00
310 180 367 -130 -469 +183/100

-8.2
+.517 -.565

f-y +387
m_1 +.149 [m_1] 219
c_1 +.256 [c_1] 179
β 2.565 (2)

.048(17)

285 247 245 −10.1 (15)

144258 20 54.4 −44 19 dG6

6.52 +0.0 −0.05 (3)
6.36 +0.2 (3)

5.4 (10)
3.6 (7)

.048 (17)

−16.0 +4.7 (1.5)

5
−0490 −967 GC Corr Cup (3)
−0487 −963 FIC4
−522
−523 −566 +Low

20.4
−44.3
−72.9
−97.6
2.0
−10.1

.223 Lower

Stay Cup −0488 −972

−0485 −968

357 144 256 2.565

(220) 177

652 384 148 204 2.575 (2)

−520
−514 −517

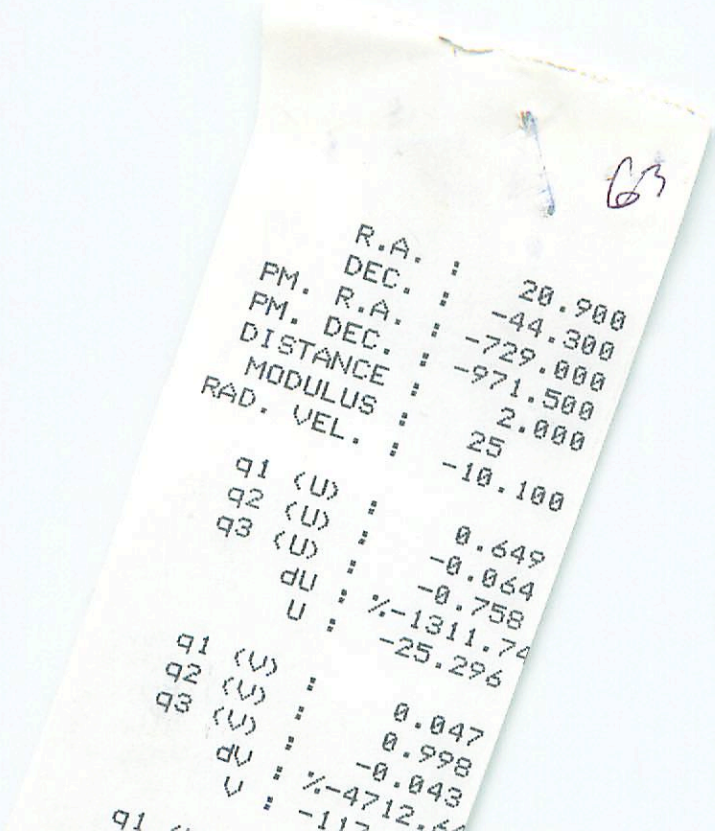
108 374
120 341 284

63

1.85
0427

-24.2
-110.0
49.7

R.A. :
DEC. :
PM. R.A. :
PM. DEC. :
DISTANCE :
MODULUS :
RAD. VEL. :
ZS :
(U) ip
(U) jp
(U) kp
Ub
U
(U) ip
(U) jp
(U) kp
Ub
U


63
R.A. : 20.900
DEC. : -44.300
PM. R.A. : -729.000
PM. DEC. : -971.500
DISTANCE : 2.000
MODULUS : 25
RAD. VEL. : -10.100
q1 (U) : 0.649
q2 (U) : -0.064
q3 (U) : -0.758
dU : %-1311.74
U : -25.296
q1 (V) : 0.047
q2 (V) : 0.998
q3 (V) : -0.043
dV : %-4712.6
V :

+0.144±83 +114±8.7 -223 Ev
+0143 +096

199803 20 57.0 +00 52 8.7 dG4 -19.7 f

29294

13180

59.035 1907.2 +0 52 8.06 19073

-616 -4.87

58.419 +0145 +104 3.19 3.5

26.0

58.846 6.11 1936.6

2 0

848 63

+429 1585 5.5 1929.7 83.2

58.74 792 -24 25.9

-3 +373 5.26

737 +217 1.27

+219 +103 5.66

+2.49

64

−0063 ± 8.7 −126 ± 7.3 −22.3 (cons

19580 20 56.9 +00 54 8.7 dF=4 −16.9

29292

13179 54.151 1906.8 +0 54 13.81 1905.2

272
1423
54.263
4
267
54.30
297

282
141
26.4

5.64
19.45
15.90 1936.6
17
16.07
17.0 1929.7
−24
16.74
16.41
−3.04

663
33.2
280

BL → BL

CC1250 20 58.1 20y +39 53 10.2 dM3c -57c 3w

13193

Δm = 1.8 A+-Ac 623 -358
B

1.7 BL-AC +540

72±8 66 m(0) 8 yk(6) +0533 +612 -235 McR McZ FK3

+0533 +2 -4

P=29.3yr ←3 -239 → ac+

608

20.95

+09.9 763

798 0.35

-235 <339

0.28

-570

P=376

-321

-337

9.13 +0.91

Radial velocity is important.

Very important

Analyzing dynamics

20.950
39.900
798.000
-235.000
0.200
11
-57.000
-33.2

0.657
0.742
-0.134
1079.971
19.455 16.28

0.939
0.144
0.989
-47.933 -24.3
-50.909

-0.753
0.655
-0.866
-2914.232
-28.999 -2978

C6

660,667

CC1253 21

13232

M4 2 sing 6

1,835 1 1 4(10)

10.52 +97 +72 2 20

660

372

+29°.4321 21 1.6 +29 11 889
21 3.6 +29 23
21 5.63 8.1 +29 34.03

41 b14 VV

+1.5 ① Upper
-1.0 ② Over
0.5
-4.9 Over

Beg. thickr. No. 75 +0.03 -0.24 9.3 K8—

-203 L
+061
+0.030 -0.240
+081 -224 VVR

55
29
55

+55 -240 2.15 -1.0

99

-5°.5480 21 1.2 −5 1 −
21 3.7 −4 50
21 6.12 KM3 −4 37.96

+11 1++12 km

+6.3@0CW

#7.6 ±1.0/0CW max

7.6

Yale zone −0.047 +0.005
−14 +5
+2 +1

9.4 K8 ±7.5

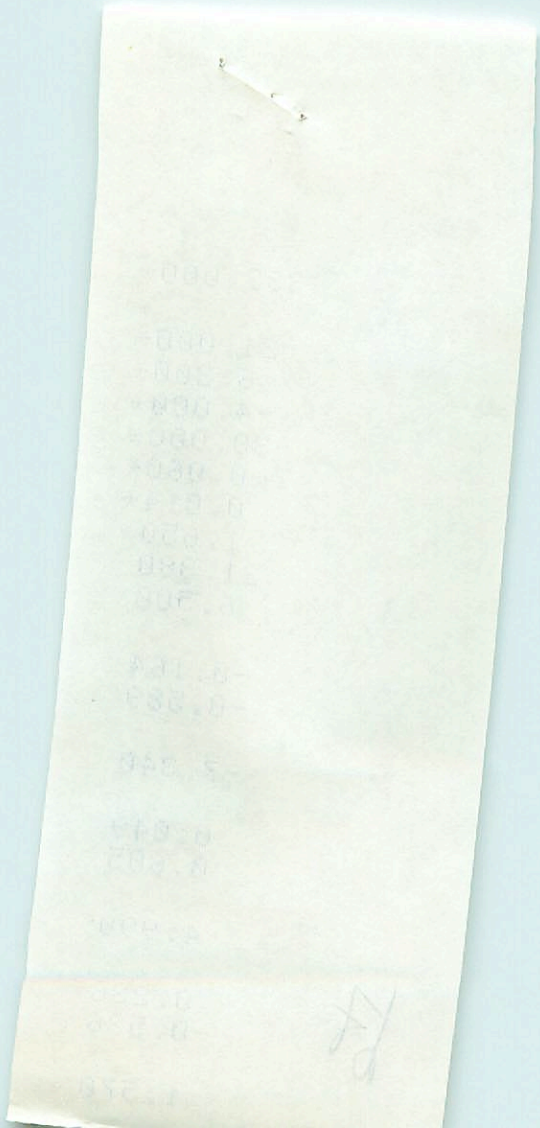
+9.0 1 0CW

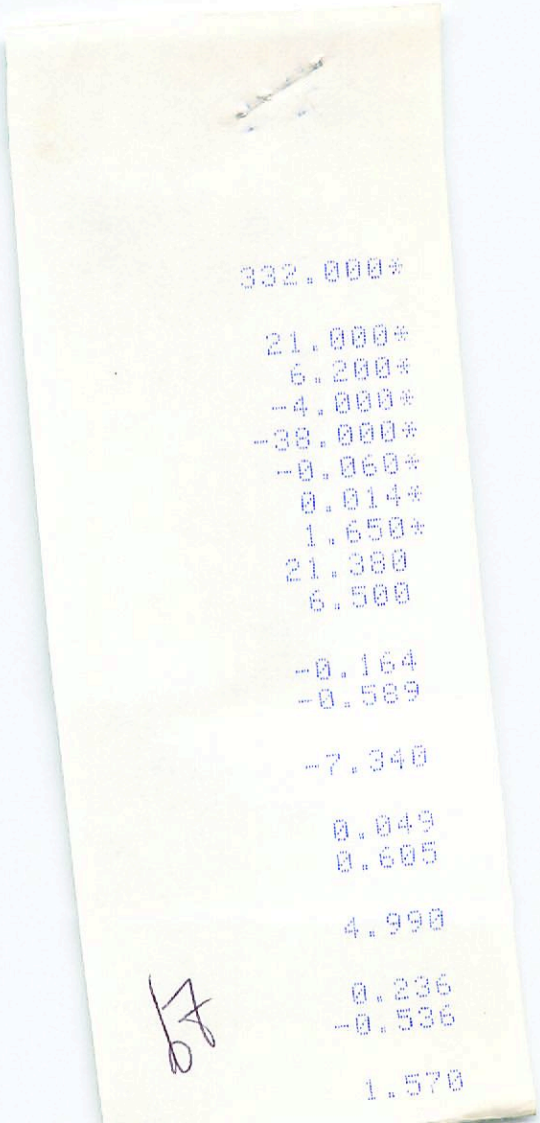
−0.059 +0.011

−60 +14 ±1.65 +6.5

B 13.40 ±1.63 —
12.10 ±1.11

−049 +006 Nodes
− 11 + 1−
−060 +018 nodes
−059 +011 "





332.000*

21.000*
6.200*
-4.000*
-38.000*
-0.060*
0.014*
1.650*
21.380
6.500

-0.164
-0.589

-7.340

0.049
0.605

4.990

0.236
-0.536

1.570

332 21 06.2 -4 38

-50 5410

BDS10765

9.45 ±1.15 ±1.00 (4) ±0.52 (1)

13.40 ±1.63 — (1) ±1.41 (1)

±1.63

-2 B0 (L)

834

−0°4195	21	10.6	−0	27
	21	12.9	−0	15
Y 5124	21	15.5 28.2	−0	3.09

HD 202751

W13377

40 A(20)
40 M(10)
45 Y(12)

8.23 +98 +84 2E99< −28C5W

5.24 99 83 40 (2) dK6

G.C. 29787 +.450 −.180

8.3 K8 +7.1

+0".042

Getaway

+0.466 −0.183

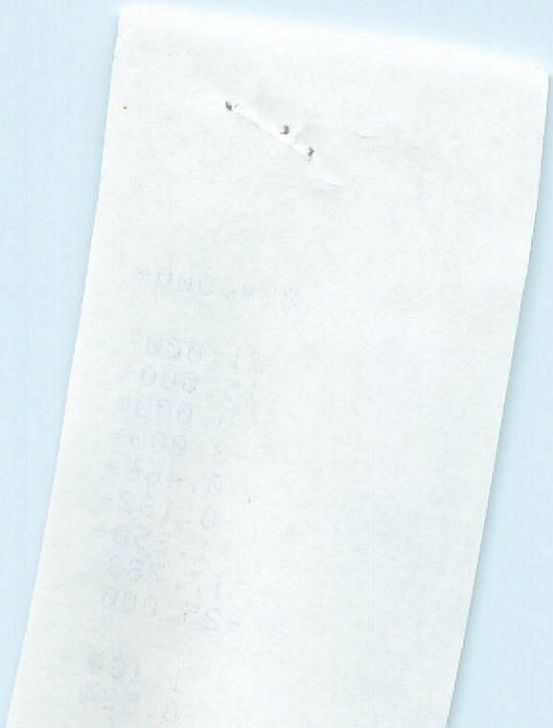
250

1.25

7.32

6 7 6

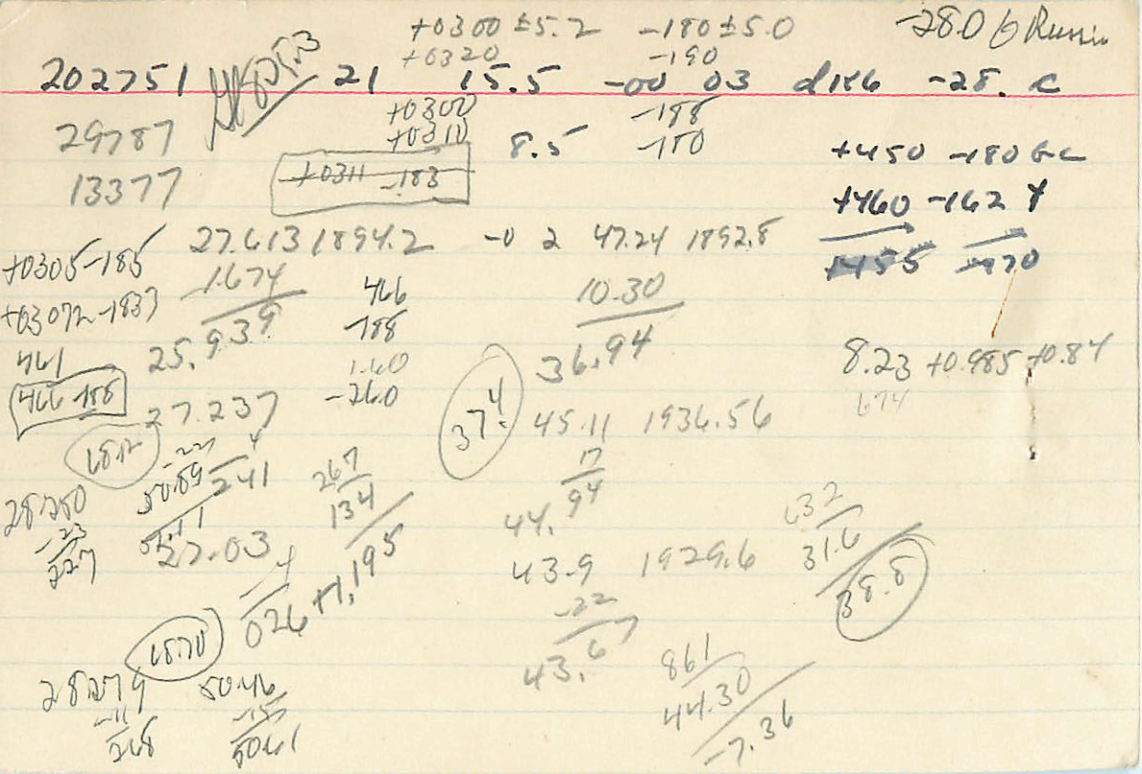
5 5



834.000*

21.000*
15.500*
0.000*
-3.000*
0.466*
-0.183*
1.250*
17.783
-25.000

1.130
-0.524


+0300 ±5.2 −180 ±5.0
+0320 −190
−28.0 6 Runs
202751 21 15.5 −00 03 d1K6 −25. C
29787
13377
+0302
+0311
8.5
−188
−190
+450 −180 6C
+460 −162 Y
+0305 −185
+0307 −183
27.613 1894.2
−0 2 47.24 1892.8
1.674
10.30
36.94
8.23 +0.985 +0.84
45.11 1936.56
44.
43.9 1929.6
43.6
44.30
−7.36

-658 755 0 1 +455 -170 -28 0 0 -$\overline{11.05}$

299 0 344 0 $\overline{1.421}$ $\overline{+16.30}$ -28.0 -21 +18 06

+3 +45 -13

5

-20.6185 21 12.0 -20 24 201

21 14.6 -20 15

Y5133 21 17.422.8 -20 1.94

HD 203040 35M(7)

W3409 61Y(10)

28C(6) 9.17 +1.35 +1.26 2SSW +21.1 f3W

GC29850 dKG

=W520 +15.1 OCW 9.1 40 +7.9

C18-2770 -181 -724

-0.175 -0.721

GC 0.75 +20.0

7.3 7.1 7.035

1W(130)

```
          R.A. :      21.250
         DEC. :      -0.050
   PM. R.A. :     466.000
   PM. DEC. :    -188.000
  DISTANCE :       1.600
    MODULUS :      21
RAD. VEL. :      -28.000

     q1 (U) :       0.700
     q2 (U) :       0.483
     q3 (U) :      -0.526
         dU :    1116.466
          U :      35.989

q1 (V) :      -0.014
q2 (V) :
3 (V) :
```

35.00

20

201.000*

21.000*
17.400*
-21.000*
-2.000*
-0.175*
-0.721*
0.750*
14.125
20.000

-1.493
-0.657

-24.222

-3.176
0.356

-37.757

-0.224
-0.665

-16.460

+12° 4499 20 48.1 +12 36 -401 ② 4ppm

20 50.3 +12 47 -353 300w 827

20 52636.7 +12 57.73 -37.7

45000.1

34 M(4)

W13133 48 ±4 24 ±18 1 ho 7.81 +1.05 +1.05 R -32 d 2w dK5

34 M(4)

Yale Zone +.558 +.371 46 r(7) -38.2 100w 8.9 K8 +7.6

-7 +3 24 h(10) +0.034

Rain

-40.9 ⑤ +0.558 MR 394 1.6

-402 ③ 4ppm +562 +374 1 ho ROW 560 375

-352 ③ 300w +0.555 +0.376 +560 +374 MLR -350

+374 780

562 22

56

574 375 G 555 87

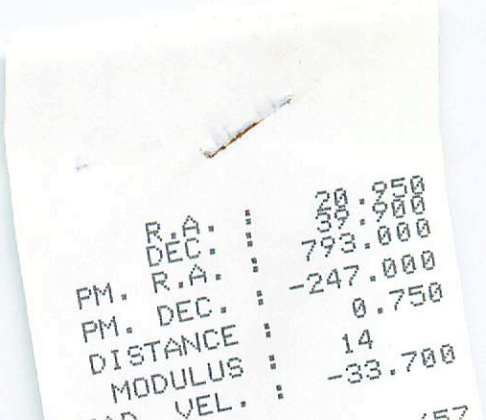
560 394 VV 380 3.2

-368 20.4

1.3

560 +371

R.A. : 20.850
DEC. : 33.500
PM. R.A. : 293.800
PM. DEC. : -242.000
DISTANCE : 0.250
MODULUS : 14
VEL. : -33.200


R.A. : 20:850
DEC. : 39:900
PM. R.A. : 793.000
PM. DEC. : -247.000
DISTANCE : 0.750
MODULUS : 14
-33.700

460,667

CC1253 21 01.4 -6 20 10.3 dN5-37C

2W

13232

~~109 = 100~~

-0250 = 270 cm

-366 M(R))

244

M4 29 in 6

1,836 1 1 4 (10)

10.52 +99 +72 2 20"

600

372

```
R.A.      :
DEC.      :
PM. R.A.  :
PM. DEC.  :
DISTANCE  :
MODULUS   :
RAD. VEL. :

            :  (U) lp
            :  (U) 2p
            :  (U) 3p
            :  Ub
            :  U

            :  (V) lp
            :  (V) 2p
            :  (V) 3p
            :  Vb
            :  V

            :  (W) lp
            :  (W) 2p
            :  (W) 3p
            :  Wb
            :  W
```

R.A.	:	21.250
DEC.	:	-0.050
PM. R.A.	:	466.000
PM. DEC.	:	-188.000
DISTANCE	:	1.600
MODULUS	:	21
RAD. VEL.	:	-26.000

q1 (U)	:	0.700
q2 (U)	:	0.483
q3 (U)	:	-0.526
dU	:	1116.466
U	:	36.989

q1 (V)	:	-0.014
q2 (V)	:	0.745
q3 (V)	:	0.667
dV	:	-694.307
V	:	-31.84

q1 (W)	:	-0.71
q2 (W)	:	0.46
q3 (W)	:	-0.52
dW	:	%-1986.
W	:	-27.75

69

-20.6185 21 12.0 -20 24 201

21 14.6 -20 15
Y5133 21 17.4 22.8 -20 1.94

HD203040 35M(7)
W3409 61Y(10)
GC29850 28C(6) 9.07 +1.35 +1.26 2sep~ +21.1 f3w
dKG

=W520 +15.1 OCW 9.1 40 +7.4

C18-2770 -181 -724

-0.175 -0.721

GC 0.75 +20.0

W630

.56