

KG

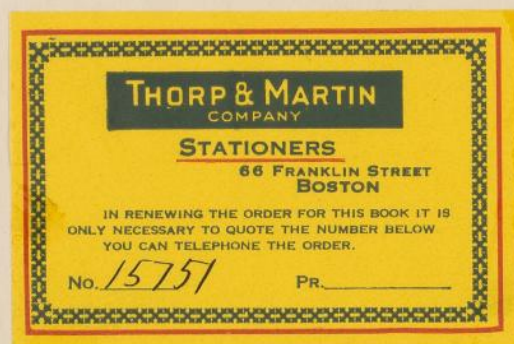
11366

106

16

Gaertner

KG 11366.106









1927phae.proj.:197  
KG11366.106





C 18450 from violet

| line      | Readings |                            |
|-----------|----------|----------------------------|
|           | 24405    | <sup>reset</sup><br>240405 |
| v edge    | }        | 243110                     |
| r edge    |          | 246194                     |
| w line    |          | 247719                     |
| v edge    |          | 249063                     |
|           |          | 257916                     |
|           |          | 259451                     |
| r edge    |          | 260584                     |
|           |          | 267936                     |
|           |          | 269925                     |
| vw line — |          |                            |
| 4227      | 275888   | 275854                     |
| v edge    | 277567   |                            |
|           | 282771   |                            |
| h         | 284129   |                            |
| h         | 285288   |                            |
| h         | 286305   |                            |
| h         | 286996   |                            |
| v edge    | 288788   |                            |
| r edge    | 292924   |                            |
|           | 295180   |                            |
| vfh       | 297010   |                            |
| vfh d?    | 300273   |                            |
|           | 301454   |                            |
|           | 302726   |                            |
|           | 305124   |                            |
|           | 305897   |                            |
|           | 309158   |                            |
|           | 311065   |                            |



313039

r edge

314429

316514

d?

319169

321861

326722

328193

ft

330350

ft

331581

332369

334344

338022

339351

vw

342685

346537

348088

349273

fine

356159

374540

375970

377862

387187

406114

409708

413716

415969

421840

428778

4861

unmeasurable



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X 11410

V Sagittarii 19<sup>h</sup> 16<sup>m</sup> -16°1

violet

|   |    |        |        |
|---|----|--------|--------|
| 3 | 1  | 607185 | 5      |
|   | 2  | 603096 | 3      |
|   | 3  | 586106 | 1      |
|   | 4  | 583459 | 1      |
| 4 | 5  | 579932 | 8      |
|   | 6  | 576095 | 1      |
|   | 7  | 572340 | 1      |
|   | 8  | 567332 | 1      |
|   | 9  | 560930 | 1      |
|   | 10 | 555931 | 2      |
|   | 11 | 551061 | 1      |
|   | 12 | 546485 | 1      |
|   | 13 | 549870 | 2      |
| 5 | 14 | 538827 | 5      |
|   | 15 | 534382 | 1      |
|   | 16 | 530720 | 1      |
|   | 17 | 521401 | 1      |
|   | 18 | 522915 | 2      |
|   | 19 | 519720 | 1      |
|   | 20 | 517409 | 2      |
|   | 21 | 510852 | 3      |
|   | 22 | 493254 | 1      |
| 6 | 23 | 488016 | 5      |
|   | 24 | 482537 | 1      |
|   | 25 | 475876 | 1      |
|   | 26 | 474280 | 1      |
|   | 27 | 472898 | <1     |
|   | 28 | 470825 | 3      |
|   | 29 | 469269 | 3      |
|   | 30 | 460733 | 1 Band |
|   | 31 | 448082 | 2 4    |

X 11410

u Sagittarii

19<sup>h</sup> 16<sup>m</sup>

-16° 1

7

model

|   |    |        |        |
|---|----|--------|--------|
| 3 | 1  | 607479 | 5      |
|   | 2  | 603830 | 3      |
|   | 3  | 586729 | 1      |
|   | 4  | 584187 | 1      |
| 4 | 5  | 580656 | 8 Band |
|   | 6  | 576868 | 1      |
|   | 7  | 561494 | 1      |
|   | 8  | 557659 | 1      |
|   | 9  | 561009 | 1      |
|   | 10 | 555933 | 3      |
|   | 11 | 551162 | 1      |
|   | 12 | 546662 | 1      |
|   | 13 | 539973 | 1      |
| 5 | 14 | 539445 | 5      |
|   | 15 | 534950 | 2      |
|   | 16 | 531360 | 1      |
|   | 17 | 527020 | 1      |
|   | 18 | 523405 | 1      |
|   | 19 | 517545 | 1      |
|   | 20 | 510969 | 2      |
|   | 21 | 493280 | 1      |
| 6 | 22 | 487860 | 1      |
|   | 23 | 482549 | 2      |
|   | 24 | 475610 | 1      |
|   | 25 | 474379 | 1      |
|   | 26 | 472990 | 1      |
|   | 27 | 470882 | 3      |
|   | 28 | 469040 | 3      |
|   | 29 | 460884 | 1 Band |
|   | 30 | 442550 | 2      |

Wide Band

wd

|   |    |                     |   |
|---|----|---------------------|---|
| 3 | 1  | 607221              | 3 |
|   | 2  | 603363              | 2 |
| 4 | 3  | 58 <sup>0</sup> 403 | 3 |
|   | 4  | 556185              | 2 |
|   | 5  | 551140              | 1 |
|   | 6  | 546 <sup>9</sup> 89 | 1 |
|   | 7  | 540242              | 1 |
|   | 8  | 538889              | 3 |
| 5 | 9  | 534480              | 1 |
|   | 11 | 523440              | 1 |
|   | 11 | 517669              | 1 |
|   | 12 | 511049              | 2 |
|   | 13 | 493329              | 1 |
|   | 14 |                     |   |
|   | 15 |                     |   |
|   | 16 |                     |   |
|   | 17 |                     |   |
|   | 18 |                     |   |

|      |        |    |
|------|--------|----|
| 32   | 442619 | 3  |
| 33   | 439492 | 3  |
| 34   | 434104 | 1  |
| 35   | 417333 | 4  |
| 36   | 401929 | 2  |
| 37   | 400481 | <1 |
| 38   | 399403 | <1 |
| 39   | 395953 | <1 |
| 40   | 392901 | <1 |
| 41   | 390975 | <1 |
| 42   | 384465 | <1 |
| 43   | 383284 | <1 |
| 44   | 381647 | 1  |
| 45   | 372931 | <1 |
| 46   | 371710 | <1 |
| 47   | 369890 | <1 |
| 48   | 368090 | 1  |
| 49   | 365634 | <1 |
| 50   | 362163 | 1  |
| 51   | 355990 | 1  |
| 52   | 352623 | <1 |
| 53   | 349374 | <1 |
| 7 54 | 348075 | 1  |
| 55   | 346602 | <1 |
| 56   | 342283 | 1  |
| 57   | 339240 | <1 |
| 58   | 337182 | 1  |
| 8 59 | 325245 | 1  |
| 60   | 323754 | 1  |
| 61   | 322450 | <1 |
| 62   | 320730 | 2  |

|   |    |        |   |
|---|----|--------|---|
|   | 32 | 434191 | 1 |
|   | 33 | 426270 | 1 |
|   | 34 | 411869 | 2 |
|   | 35 | 407346 | 3 |
|   | 36 | 401975 | 1 |
|   | 37 | 400630 | 2 |
|   | 38 | 399387 | 2 |
|   | 39 | 396021 | 1 |
|   | 40 | 392886 | 3 |
|   | 41 | 390922 | 2 |
|   | 42 | 384340 | 1 |
|   | 43 | 383279 | 1 |
|   | 44 | 381618 | 2 |
|   | 45 | 372998 | 1 |
|   | 46 | 371620 | 1 |
|   | 47 | 369659 | 2 |
|   | 48 | 368046 | 2 |
|   | 49 | 365650 | 1 |
|   | 50 | 362069 | 2 |
|   | 51 | 355940 | 2 |
|   | 52 | 352638 | 2 |
|   | 53 | 349380 | 2 |
| 7 | 54 | 348120 | 3 |
|   | 55 | 346641 | 2 |
|   | 56 | 342252 | 2 |
|   | 57 | 339274 | 1 |
|   | 58 | 337180 | 2 |
| 8 | 59 | 325239 | 2 |
|   | 60 | 323805 | 1 |
|   | 61 | 322491 | 1 |

|   |    |        |    |
|---|----|--------|----|
|   | 63 | 309804 | 1  |
|   | 64 | 300050 | 1  |
|   | 65 | 296607 | <1 |
|   | 66 | 291054 | <1 |
|   | 67 | 288147 | <1 |
| 9 | 68 | 283560 | 3  |
|   | 69 | 278949 | 5  |
|   | 70 | 275390 | <1 |
|   | 71 | 274259 | <1 |
|   | 72 | 269730 | <1 |
|   | 73 | 266425 | 2  |
|   | 74 | 263266 | 2  |
|   | 75 | 261077 | 1  |
|   | 76 | 260051 | 1  |
|   | 77 | 254802 | 1  |
|   | 78 | 251579 | 1  |
|   | 79 | 248044 | 2  |
|   | 80 | 246658 | <1 |
|   | 81 | 245322 | 2  |
|   | 82 | 243954 | <1 |
|   | 83 | 238210 | <1 |
|   | 84 | 236264 | <1 |
|   | 85 | 234894 | <1 |
|   | 86 | 233177 | 3  |
|   | 87 | 231130 | 1  |
|   | 88 | 227827 | <1 |
|   | 89 | 225370 | <1 |
|   | 90 | 217250 | 1  |
|   | 91 | 215126 | <1 |
|   | 92 | 213574 | 2  |
|   | 93 | 211518 | 1  |

|      |        |    |
|------|--------|----|
| 63   | 309416 | 1  |
| 64   | 299980 | 1  |
| 65   | 296430 | <1 |
| 66   | 290727 | 1  |
| 67   | 287912 | <1 |
| 9 68 | 283176 | 3  |
| 69   | 278526 | 5  |
| 70   | 275119 | <1 |
| 71   | 274015 | 1  |
| 72   | 279430 | <1 |
| 73   | 266250 | 2  |
| 74   | 262954 | 2  |
| 75   | 260689 | 1  |
| 76   | 259628 | 1  |
| 77   | 254630 | 1  |
| 78   | 251101 | 1  |
| 79   | 247710 | 2  |
| 80   | 246350 | <1 |
| 81   | 245040 | 1  |
| 82   | 243762 | 1  |
| 83   | 237936 | <1 |
| 84   | 236008 | <1 |
| 85   | 234400 | <1 |
| 86   | 232980 | 2  |
| 87   | 230765 | <1 |
| 88   | 227610 | 1  |
| 89   | 225158 | <1 |
| 90   | 217034 | 1  |
| 91   | 215010 | <1 |
| 92   | 213380 | 2  |
| 93   | 211249 | 1  |

|    |     |        |    |
|----|-----|--------|----|
|    | 94  | 208257 | <1 |
|    | 95  | 202525 | <1 |
|    | 96  | 199955 | 1  |
|    | 97  | 198689 | <1 |
|    | 98  | 197505 | <1 |
|    | 99  | 195717 | 2  |
|    | 100 | 193230 | 1  |
|    | 101 | 179988 | 1  |
|    | 102 | 172983 | 1  |
|    | 103 | 169854 | <1 |
|    | 104 | 155027 | 1  |
|    | 105 | 145260 | <1 |
|    | 106 | 141665 | <1 |
|    | 107 | 138417 | 1  |
|    | 108 | 130274 | <1 |
| 10 | 109 | 125509 | 2  |
| 11 | 110 | 104564 | 2  |
|    | 111 | 82420  | 1  |

|        |        |    |
|--------|--------|----|
| 94     | 208015 | <1 |
| 95     | 202216 | <1 |
| 96     | 199710 | 1  |
| 97     | 198448 | 1  |
| 98     | 197145 | <1 |
| 99     | 195633 | <1 |
| 100    | 193150 | <1 |
| 101    | 179823 | 1  |
| 102    | 172820 | <1 |
| 103    | 169610 | <1 |
| 104    | 154831 | <1 |
| 105    | 145155 | <1 |
| 106    | 141509 | <1 |
| 107    | 138377 | <1 |
| 108    | 130180 | <1 |
| 10 109 | 125453 | 2  |
| 11 110 | 104430 | >1 |
| 111    |        |    |

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v Sagittarii

X 11410

19<sup>h</sup> 16<sup>m</sup>-16° 1'  
Reversed Mean  
subt'd from 80.0Reduced  $\lambda$ 

Mean

|             |   |    |        |   |               |          |        |         |      |
|-------------|---|----|--------|---|---------------|----------|--------|---------|------|
| from violet | 3 | 1  | 607825 | 2 |               | 3934.448 | 192175 | 6078.25 | from |
|             |   | 2  | 604050 | 1 |               |          |        | 6040.16 |      |
|             | 4 | 3  | 580745 | 3 | Band          |          |        | 5807.83 |      |
|             |   | 4  | 556550 | 2 |               |          |        | 5565.55 |      |
|             |   | 5  | 551758 | 1 |               |          |        | 5517.69 |      |
|             |   | 6  | 547271 | 1 |               |          |        | 5473.52 |      |
|             |   | 7  | 540983 | 1 |               |          |        | 5409.87 |      |
|             | 5 | 8  | 539529 | 3 |               |          |        | 5395.84 |      |
|             |   | 9  | 535079 | 1 | ~ fl          |          |        | 5351.18 |      |
|             |   | 10 | 523890 | 1 | shp           |          |        | 5239.31 |      |
|             |   | 11 | 518219 | 1 | ~ fl          |          |        | 5182.40 |      |
|             |   | 12 | 511748 | 1 | very shp      |          |        | 5117.07 |      |
|             |   | 13 | 504975 | 1 | wd very hazgy |          |        | 5049.16 |      |
| →           |   | 14 | 501561 | 1 | ~ fl          |          |        |         |      |
|             |   | 15 | 494154 | 1 |               |          |        | 4940.88 |      |
| HS          | 6 | 16 | 488739 | 3 | ~ shp         | 4101.74  | 311286 | 4887.19 | H    |
|             |   | 17 | 476159 | 1 |               | 4121.141 | 323851 | 4761.49 |      |
|             |   | 18 | 474970 | 1 | shp           | 4122.917 | 324989 | 4750.11 | L    |
|             |   | 19 | 473751 | 1 | fl            | 4124.887 | 326250 | 4737.50 | F    |
|             |   | 20 | 471540 | 2 | shp           | 4128.221 | 328421 | 4715.79 | F    |
|             |   | 21 | 469880 | 2 | shp           | 4130.995 | 330145 | 4698.55 |      |
|             |   | 22 | 461870 | 1 | fl            | 4143.623 | 338125 | 4618.75 | H    |
|             |   | 23 | 460440 | 1 | ~ fl          | 4145.721 | 339445 | 4605.55 | ?    |
| →           |   | 24 | 449250 | 1 | ~ fl          |          |        |         |      |
|             |   | 25 | 446143 | 1 | fl            | 4168.991 | 353868 | 4461.32 |      |
|             |   | 26 | 443425 | 3 | shp           | 4173.4   | 356591 | 4434.18 | F    |
|             |   | 27 | 440070 | 4 | sp            | 4178.955 | 359950 | 4400.50 | F    |
|             |   | 28 | 434830 | 1 | fl            | 4187.584 | 365170 | 4348.30 | T    |
|             |   | 29 | 427159 | 1 |               | 4200.382 | 372835 | 4271.65 |      |
|             |   | 30 | 408026 | 4 | ~ shp         | 4232.519 | 391980 | 4080.20 |      |
|             |   | 31 | 402619 | 2 | shp           | 4242.79  | 397358 | 4026.42 |      |

| Element           |    | Reset |        |    | $\lambda$ |
|-------------------|----|-------|--------|----|-----------|
| from riddel       | 3  | 1     | 607844 | 2  | 3934.448  |
|                   |    | 2     | 603982 | 1  |           |
|                   | 4  | 3     | 580821 | 2  |           |
|                   |    | 4     | 556560 | 1  |           |
|                   |    | 5     | 551779 | 1  |           |
|                   |    | 6     | 547432 | 1  |           |
|                   |    | 7     | 540991 | 1  |           |
|                   | 5  | 8     | 539639 | 2  |           |
|                   |    | 9     | 535156 | 1  |           |
|                   |    | 10    | 523971 | 1  |           |
|                   | →  | 11    | 520493 | 21 |           |
|                   |    | 12    | 518261 | 21 |           |
|                   |    | 13    | 51666  | 1  |           |
|                   |    | 14    | 504856 | 1  |           |
|                   |    | 15    | 494022 | 1  |           |
| HS                | 6  | 16    | 488689 | 2  | 4101.74   |
| He                | →  | 17    | 483412 | 1  | 4121.141  |
| Li <sup>+</sup> ? |    | 18    | 476140 | 1  |           |
|                   |    | 19    | 475052 | 1  |           |
| Fe <sup>+</sup>   |    | 20    | 473749 | 21 |           |
|                   |    | 21    | 471618 | 2  |           |
| He                | 22 | 22    | 469830 | 2  |           |
| ?                 |    | 23    | 461779 | 21 |           |
|                   |    | 24    | 460670 | 21 |           |
|                   |    | 25    | 446121 | 1  |           |
| Fe <sup>+</sup>   | 26 | 26    | 443411 | 3  |           |
| Fe <sup>+</sup>   | 27 | 27    | 440030 | 4  |           |
| Fe                | 28 | 28    | 434829 | 1  |           |
|                   | 29 | 29    | 427170 | 21 |           |
| Fe                |    |       |        |    |           |
| Fe <sup>+</sup>   | 30 | 30    | 408014 | 4  |           |
|                   |    |       |        |    |           |

|    |    |        |    | Reduced     | Reversed Mean<br>subtitled from 80.0 |                 |
|----|----|--------|----|-------------|--------------------------------------|-----------------|
|    | 32 | 401350 | 1  | fl          | 4244.662                             | 3 98670 4013 30 |
|    | 33 | 400072 | 1  | ~ shp       | 4247.099                             | 3 99923 4000 77 |
|    | 34 | 396712 | 1  | ~ shp       | 4252.796                             | 4 03303 3966 97 |
|    | 35 | 393567 | 2  | wd shp      | 4258.607                             | 4 06488 3935 12 |
|    | 36 | 391489 | 1  | shp         | 4262.016                             | 4 08513 3914 87 |
|    | 37 | 385338 | 1  | shp         | 4273.103                             | 4 14721 3852 79 |
|    | 38 | 384059 | 1  | shp         | 4275.54                              | 4 16081 3839 19 |
|    | 39 | 382250 | 2  | shp double? | 4278.563                             | 4 17756 3822 44 |
|    | 40 | 373818 | 1  | fl          | 4293.852                             | 4 26175 3738 25 |
|    | 41 | 372622 | 1  |             | 4296.02                              | 4 27359 3726 41 |
|    | 42 | 370362 | 1  |             | 4300.092                             | 4 29578 3704 22 |
|    | 43 | 368749 | 2  | shp         | 4303.18                              | 4 31255 3687 45 |
|    | 44 | 366132 | 1  | fl          | 4308.046                             | 4 33889 3661 11 |
|    | 45 | 362633 | 2  | wd          | 4314.21                              | 4 37208 3627 92 |
|    | 46 | 356656 | 2  | wide        | 4325.723                             | 4 43361 3566 39 |
|    | 47 | 350070 | 21 | fl          |                                      | 3500 73         |
| Hy | 48 | 348789 | 3  | shp         | 4340.46                              | 4 51151 3488 49 |
|    | 49 | 347344 | 1  | fl          | 4343.556                             | 4 52770 3472 30 |
|    | 50 | 343050 | 3  | ~ shp       | 4351.531                             | 4 56930 3430 70 |
|    | 51 | 339951 | 1  |             | 4357.524                             | 4 60038 3399 62 |
|    | 52 | 337779 | 2  | wd          | 4361.893                             | 4 62293 3377 67 |
|    | 53 | 329989 | 21 | fl          | 4376.978                             | 4 70015 3299 85 |
| 8  | 54 | 325969 | 3  | wd          | 4385.032                             | 4 74097 3259 03 |
|    | 55 | 324452 | 1  | shp         | 4387.911                             | 4 75549 3244 51 |
|    | 56 | 323148 | 1  | shp         | 4390.546                             | 4 76875 3231 25 |
|    | 57 | 320656 | 3  | shp         | 4395.451                             | 4 79336 3206 64 |
|    | 58 | 309930 | 2  | ~ wd, land  | 4409.093                             | 4 90071 3099 29 |
|    | 59 | 300072 | 1  | fl          | 4437.311                             | 4 99924 3000 76 |
|    | 60 | 296736 | 1  | fl          | 4444.243                             | 5 03264 2967 36 |
|    | 61 | 296150 | 1  | wd fl       | 4445.446                             | 5 03842 2961 58 |
|    | 62 | 288389 | 1  | fl          | 4461.764                             | 5 11620 2883 80 |

|     |    |        |    |          |         |
|-----|----|--------|----|----------|---------|
|     | 32 | 401310 | 1  | shp      |         |
| Sc+ | 33 | 400082 | <1 | sh       |         |
|     | 34 | 396682 | 1  | sh       |         |
| Fe+ | 35 | 393456 | 1  | ~ wd     |         |
| ?   | 36 | 391485 | <1 | ~ sh     |         |
| Fe  | 37 | 390420 | <1 | ~ sh     |         |
| Cr  | 38 | 385220 | 1  | shp      |         |
| ?   | 39 | 383779 | 1  | shp      |         |
| Ti+ | 40 | 382238 | 2  | double?  |         |
| Fe+ | 41 | 373831 | 1  | shp      |         |
| Fe  | 42 | 372659 | 1  | shp      |         |
| Ti+ | 43 | 370481 | <1 | sh       |         |
| Fe+ | 44 | 368740 | 1  | shp      |         |
| Fe  | 45 | 366089 | <1 | sh       |         |
| Ti+ | 46 | 362950 | 2  | ~ wd     |         |
| Sc+ | 47 | 356621 | 2  | ~ wd     |         |
| Ti+ | 48 | 350075 | <1 | sh       | 4340.46 |
| HY  | 49 | 348909 | 3  | shp      | 4340.46 |
| Fe+ | 50 | 347116 | 1  | sh       |         |
|     | 51 | 343089 | 3  | shp      |         |
|     | 52 | 339970 | 1  | sh       |         |
|     | 53 | 337754 | 1  | wd       |         |
| Fe+ | 54 | 329980 | <1 | sh       |         |
| He  | 55 | 325836 | 3  | wd       |         |
| Mg+ | 56 | 324449 | 2  |          |         |
| Ti+ | 57 | 323101 | 1  |          |         |
|     | 58 | 320672 | 3  |          |         |
| He  | 59 | 309928 | 1  | wd, band |         |
| Ti+ | 60 | 300079 | 1  | ~ wd     |         |
| Fe  | 61 | 296735 | 1  | sh       |         |
| Fe+ | 62 | 296665 | 1  |          |         |

|   |    |         |                 | Reduced $\lambda$ | Revised Mean<br>Subtitled from 80.0 |        |
|---|----|---------|-----------------|-------------------|-------------------------------------|--------|
| 9 | 63 | 28 3672 | 3 wd            | 4471.797          | 51.6351                             | 283649 |
|   | 64 | 279241  | 5 very shp      | 4481.222          | 520760                              | 279240 |
|   | 65 | 274471  | 1 shp, am loni? | 4491.522          | 525538                              | 274462 |
|   | 66 | 269862  | 1 sh            | 4501.497          | 530129                              | 269851 |
|   | 67 | 266743  | 1 shp           | 4508.369          | 533269                              | 266731 |
|   | 68 | 263411  | 1 shp           | 4515.645          | 536575                              | 263425 |
|   | 69 | 261241  | 1 shp           | 4520.404          | 538727                              | 261273 |
|   | 70 | 259063  | 1 wd            | 4525.31           | 540936                              | 259064 |
|   | 71 | 254954  | 2 shp           | 4539.88           | 544998                              | 255002 |
|   | 72 | 251770  | 2 shp           | 4541.665          | 548240                              | 251760 |
|   | 73 | 248253  | 22 shp          | 4549.62           | 551758                              | 248242 |
|   | 74 | 246870  | 1 sh            | 4552.764          | 553142                              | 246858 |
|   | 75 | 245449  | 2 shp           | 4555.977          | 554553                              | 245447 |
|   | 76 | 244115  | 1               | 4558.984          | 555870                              | 244130 |
|   | 77 | 238339  | 1 sh            | 4572.287          | 561660                              | 238340 |
|   | 78 | 236415  | 1 sh            | 4576.701          | 563568                              | 236432 |
|   | 79 | 234769  | 1 sh            | 4580.377          | 565151                              | 234849 |
|   | 80 | 233250  | 22 shp          | 4584.099          | 566750                              | 233250 |
|   | 81 | 231329  | 1               | 4588.535          | 568645                              | 231355 |
|   | 82 | 227985  | 1               | 4596.476          | 572033                              | 227967 |
|   | 83 | 225420  | 1               | 4602.435          | 574558                              | 225442 |
|   | 84 | 217154  | 1 wd            | 4622.223          | 582840                              | 217160 |
|   | 85 | 215160  | 1 sh            | 4626.977          | 584835                              | 215165 |
|   | 86 | 213780  | 1 wd            | 4630.453          | 586275                              | 213725 |
|   | 87 | 211551  | 1 wd            | 4635.752          | 588460                              | 211540 |
|   | 88 | 202552  | 1 sh            | 4657.76           | 597452                              | 202548 |
|   | 89 | 200065  | 1 shp           | 4663.89           | 599929                              | 200071 |
|   | 90 | 198724  | 1 sh            | 4667.21           | 601265                              | 198735 |
|   | 91 | 197530  | 1 sh            | 4670.184          | 602461                              | 197539 |
|   | 92 | 193598  | 1 sh            | 4680.11           | 606426                              | 193574 |
|   | 93 | 180359  | 1               | 4713.775          | 619645                              | 180355 |

Element

|       |      |        |    |              |
|-------|------|--------|----|--------------|
| He    |      |        |    |              |
| Fet   | 63   | 288371 | 1  |              |
| ? Mgt | 9 64 | 283625 | 3  | wd           |
| Fet   | 65   | 279238 | 5  | very shp     |
| Ti+   | 66   | 274452 | 1  | em to violet |
| Fet   | 67   | 269840 | <1 | fl           |
| Fet   | 68   | 266719 | 1  | shp          |
| Fet   | 69   | 263438 | 1  | shp          |
| Fe    | 70   | 261305 | 1  | shp          |
|       | 71   | 260252 | 1  | shp          |
| Fet   | 72   | 259065 | <1 | undef        |
| Fet   | 73   | 255050 | 2  | shp          |
|       | 74   | 251750 | 2  | shp          |
| Fe+   | 75   | 248230 | 2  | shp          |
| ?     | 76   | 246845 | 1  | shp          |
| Ti+   | 77   | 245445 | 2  | shp          |
| Fet   | 78   | 244144 | 1  | fl           |
| ? ?   | 79   | 238341 | 1  | fl           |
| Fet   | 80   | 236449 | 1  | fl           |
|       | 81   | 235030 | 1  | fl           |
|       | 82   | 233250 | 2  | shp          |
| Fe    | 83   | 231380 | <1 | shp          |
|       | 84   | 227949 | <1 | shp          |
| Fe    | 85   | 225464 | <1 | shp          |
| Lat   |      |        |    |              |
| ? Fet | 86   | 217166 | 1  | wd           |
|       | 87   | 215120 | <1 | fl           |
| Fet   | 88   | 213670 | 1  | wd           |
| Lat   | 89   | 211529 | 1  | wd           |
|       | 90   | 202545 | 1  | fl           |
| Sct   | 91   | 200076 | 1  | shp          |
|       | 92   | 198745 | <1 | shp          |
| He    | 93   | 197548 | <1 | shp          |

|     |        |         |    |         |          |        |        |
|-----|--------|---------|----|---------|----------|--------|--------|
|     | 94     | 1.73011 | 1  | slp     | 4732.52  | 626979 | 173021 |
| →   | 95     | 1.69936 | >1 | ~ fl    |          |        |        |
|     | 96     | 150170  | >1 | ~ fl    | 4793.813 | 649830 | 150170 |
|     | 97     | 141940  | >1 | ~ fl    | 4816.58  | 658092 | 141908 |
|     | 98     | 138895  | >1 | ~ fl    | 4825.069 | 661136 | 138864 |
| H/β | 10 99  | 126050  | 2  | wd      | 4861.33  | 673945 | 126055 |
|     | 11 100 | 104589  | <2 | fl r wd | 4924.152 | 695361 | 104639 |

? Fe+

94 193550

1

95 180350

1

r wide

96 173031

1

wd

Fe

97 150169

&lt;1

H

98 141875

&lt;1

H

H $\beta$ 

99 138832

&lt;1

H

H $\alpha$ 

10 100 126060

1

wd

4861.33

11 101 104689

1

r wd

4861.33

102

1927 April 6

Spectrum of  $\beta$  Orionis, faintest on C18597. For scale

| Line       | Measure | 414472 -<br>M |
|------------|---------|---------------|
| 4861       | 229191  | 185281        |
|            | 246878  | 167594        |
| 4481       | 288220  | 126252        |
| 4471       | 289977  | 124495        |
| 4340       | 315121  | 099351        |
| 4101       | 368860  | 045612        |
| 4026       | 388376  | 026096        |
| 3968       | 3970    | 404060        |
|            |         | 010412        |
| 3933       | 414472  | 00000         |
| H $\beta$  | 427919  | -013447       |
| H $\gamma$ | 444918  | -030446       |

C18597

Strongest spectrum

|                |        |              |
|----------------|--------|--------------|
|                |        | 330074<br>-M |
| 4922           | 523542 | 193468       |
| 4861           | 515736 | 185662       |
| 4481           | 456314 | 126240       |
| 4471           | 454461 | 124387       |
| 4340           | 429357 | 099283       |
| 4101           | 375799 | 045725       |
| 4026           | 356218 | 026144       |
| 3968<br>4009   | 351515 | 021441       |
| 3970           | 340621 | 010547       |
| 3933           | 330074 | 00000        |
| H <sub>3</sub> | 316645 | -013439      |
|                | 308291 | -021883      |
| H <sub>γ</sub> | 299778 | -030296      |
|                | 294918 | 035156       |
| H <sub>δ</sub> | 287362 | 042712       |
| H <sub>ε</sub> | 278028 | 052046       |
| H <sub>κ</sub> | 270912 | 059162       |
| H <sub>λ</sub> | 265229 | 064845       |
| H <sub>μ</sub> | 260788 | 069286       |
| H <sub>ν</sub> | 257063 | 073011       |
| H <sub>ξ</sub> | 254166 | 075908       |

24

Constants.  $\lambda_0 = 2034.33$   $C_0 = 10772591$   
 $n_0 = 864057$

C 18597

 $\alpha$  Orionis, stronger spectrum

| No.* | Measure | $n - n_0$ |         |
|------|---------|-----------|---------|
| 75   | 297884  | 566173    | 3937.03 |
| 76-7 | 300769  | 563288    | 3946.77 |
| 78   | 301907  | 562150    | 3950.72 |
| 80   | 304026  | 560031    | 3957.90 |
| 81   | 305426  | 558631    | 3962.72 |
| 83   | 307809  | 556248    | 3970.99 |
| 84   | 309144  | 555013    | 3975.29 |
| 85   | 311420  | 552637    | 3983.64 |
| 86   | 313809  | 550248    | 3992.10 |
| 87   | 315117  | 548940    | 3996.77 |
| 88   | 315951  | 548106    | 3999.75 |
| 89   | 317838  | 546219    | 4006.53 |
| 90   | 318810  | 545247    | 4010.06 |
| 91   | 319751  | 544206    | 4013.37 |
| 92   | 321283  | 542774    | 4019.06 |
| 93   | 322160  | 541897    | 4022.28 |
| 94   | 323055  | 541002    | 4025.56 |
| 95   | 324818  | 539239    | 4032.07 |
| 96   | 325579  | 538478    | 4034.90 |
| 97   | 327513  | 536544    | 4042.11 |
| 98   | 328610  | 535447    | 4046.22 |
| 99   | 331135  | 532922    | 4055.75 |
| 100  | 332281  | 531776    | 4060.11 |
| 101  | 333450  | 530607    | 4064.57 |

\* This refers to line number on  $\mu\text{p}$  380  
 Only the lines certainly identified on  $\mu\text{p}$  380 are measured

| No.      | Measure | 864057-n    |         |
|----------|---------|-------------|---------|
| 102      | 334428  | 529629      | 4067.78 |
| 103      | 335460  | 528597      | 4068.78 |
| 104      | 337035  | 527022      | 4078.37 |
| 105      | 338429  | 525628      | 4082.80 |
| 106      | 339504  | 524553      | 4087.98 |
| 107      | 340873  | 523184      | 4093.37 |
| 108      | 341774  | 522283      | 4096.92 |
| 4101 109 | 342990  | 521067      | 4101.73 |
| 110      | 345052  | 519005      | 4109.95 |
| 111      | 347344  | 516713      | 4119.46 |
| 112      | 348753  | 515304      | 4124.86 |
| 113      | 349490  | 514567      | 4127.85 |
| 114      | 351511  | 512546      | 4136.11 |
| 115      | 353478  | 510579      | 4144.00 |
| 116      | 360404  | 503653      | 4168.03 |
| 117      | 361581  | 502476      | 4178.23 |
| 118      | 362442  | 501615      | 4181.91 |
| 119      | 363860  | 500197      | 4187.99 |
| 120      | 364724  | 499333      | 4191.63 |
| 121      | 365663  | edge 498394 | 4195.79 |
| 122      | 368365  | edge 495692 | 4207.57 |
| 123      | -       | -           | /       |
| 4215 124 | 370171  | 493886      | 4215.52 |
| 125      | 372664  | 491393      | 4226.58 |
| 126      | 374239  | 489818      | 4233.63 |
| 127      | 375199  | 488858      | 4237.95 |
| 128      | 377365  | 486692      | 4247.76 |
| 129      | 378160  | 485897      | 4251.38 |
| 130      | 379002  | 485055      | 4255.23 |
| 131      | 380052  | 484003      | 4260.05 |

$\alpha$  Orionis C18597

map 380

| No.        | Measure |        | $\lambda$                |
|------------|---------|--------|--------------------------|
| 132        | 381832  | 482225 | 4268.26                  |
| 133        | 382645  | 481412 | 4272.03                  |
| 134        | 383286  | 480771 | 4275.07                  |
| 135        | 384721  | 479336 | 4281.72                  |
| 136        | 386582  | 477475 | 4290.48                  |
| 137        | 388584  | 475473 | 4299.98                  |
| 138        | 390079  | 473978 | 4307.13                  |
| 139        | 391580  | 472477 | 4314.35                  |
| a          | 392951  | 471106 | 4320.98                  |
| 140        | 393962  | 470095 | 4325.90                  |
| 141        | 394857  | 469200 | <del>4329.</del> 4330.27 |
| (n.r.) 142 | 396720  | 467337 | 4339.43                  |
| 143        | 397821  | 466286 | 4344.87                  |
| 144        | 399174  | 464873 | 4351.64                  |
| 145        | 400768  | 463289 | 4359.57                  |
| 146        | 402377  | 461680 | 4367.67                  |
| 147        | 403821  | 460236 | 4374.99                  |
| 148        | 405564  | 458493 | 4383.85                  |
| 149        | 406585  | 457472 | 4389.13                  |
| 150        | 407729  | 456328 | 4395.04                  |
| 151        | 408811  | 455246 | 4400.65                  |
| 152        | 409849  | 454208 | 4406.06                  |
| 153        | 411675  | 452382 | 4415.63                  |
| 154        | 412961  | 451096 | 4422.42                  |
| 155        | 413986  | 450071 | 4427.86                  |
| 156        | 415309  | 448748 | 4434.91                  |
| 157        | 416651  | 447406 | 4442.11                  |
| 158        | 418994  | 445063 | 4454.79                  |
| 159        | 420290  | 443767 | 4461.86                  |
| 160        | 421070  | 442987 | 4466.13                  |
| 161        | 423711  | 440346 | 4480.72                  |

| No. | Measure |        | $\lambda$ |
|-----|---------|--------|-----------|
| 162 | 425361  | 438696 | 4489.92   |
| 163 | 426361  | 437696 | 4495.53   |
| 164 | 427568  | 436489 | 4512.34   |
| 165 | 428435  | 435622 | 4507.25 x |
| 166 | 430183  | 433874 | 4517.21   |
| 167 | 431131  | 432926 | 4526.65   |
| 168 | 432139  | 431918 | 4528.45   |
| 169 | 433108  | 430949 | 4534.06   |
| 170 | 434230  | 429827 | 4540.59   |
| 171 | 435070  | 428987 | 4545.49   |
| 172 | 435701  | 428356 | 4549.19   |
| 173 | 436651  | 427406 | 4554.78   |
| 174 | 438022  | 426035 | 4562.89   |
| 175 | 440831  | 423226 | 4579.68   |
| 176 | 441896  | 422161 | 4586.10   |
| 177 | 443106  | 420951 | 4593.43   |
| 178 | 444756  | 419301 | 4603.50   |
| 179 | 446168  | 417889 | 4612.18   |
| 180 | 446719  | 417338 | 4615.59   |
| 182 | 448850  | 415207 | 4628.84   |
| 183 | 449829  | 414228 | 4634.97   |
| 184 | 450636  | 413421 | 4640.04   |
| 184 | —       | —      | —         |
| 185 | 451479  | 412578 | 4645.37   |
| 186 | 453040  | 411017 | 4655.28   |
| 187 | 454991  | 409066 | 4667.79   |
| 188 | —       | —      | —         |
| 189 | —       | —      | —         |
| 190 | —       | —      | —         |
| 191 | —       | —      | —         |

$\alpha$  Orionis

| No.           | Measure                            |        |         |
|---------------|------------------------------------|--------|---------|
| 198           | 468961                             | 395096 | 4760.90 |
| 199           | 47 <sup>2</sup> 5 <sup>21</sup> 70 | 391536 | 4785.69 |
| 200           | 474308                             | 389749 | 4798.31 |
| 201           | 475479                             | 388578 | 4806.64 |
| 202           | —                                  | —      |         |
| 203           | —                                  | —      |         |
| 204           | —                                  | —      |         |
| 205           | —                                  | —      |         |
| 206           | —                                  | —      |         |
| H $\beta$ 207 | 482996                             | 381061 | 4861.22 |
| 208           | <del>490997</del>                  | —      |         |
| 209           |                                    | —      |         |
| 210           |                                    | —      |         |
| 211           |                                    | —      |         |
| 212           | 490997                             | 373060 | 4921.95 |
| 213           | 492792                             | 371265 | 4935.92 |
| 214           | 494983                             | 369074 | 4953.14 |
| 215           | 495785                             | 368272 | 4959.50 |
| 216           |                                    | —      |         |
| 217           |                                    | —      |         |
| 218           |                                    | —      |         |
| 219           | 498581                             | 365476 | 4981.88 |
| 220           |                                    | —      |         |
| 221           |                                    | —      |         |
| 222           | 505588                             | 358469 | 5039.49 |
| 223           |                                    | —      |         |
| 224           |                                    | —      |         |
| 225           | 506909                             | 357148 | 5050.61 |
| 226           |                                    |        |         |
| 227           |                                    |        |         |

|     |        |        |         |
|-----|--------|--------|---------|
| 228 | 510386 | 353671 | 5080.26 |
| 229 | 513784 | 350273 | 5109.81 |
| 230 | ↓      | ↓      |         |
| 231 | 515585 | 348472 | 5125.70 |
| 232 |        |        |         |
| 233 |        |        |         |
| 234 | 518530 | 345527 | 5152.05 |
| 235 | 519846 | 344211 | 5163.97 |

| arcturus | aldebaran |
|----------|-----------|
| 103      | 1         |
| 104      | 2         |
| 105      | 3         |
| 106      | 4         |
| 107      |           |
| 109      | 5         |
| 110      | 6         |
| 111      | 7         |
| 112      | 8         |
| 116      | 9         |
| 117      | 10        |
| 119      | 11        |
| 122      | 12        |
| 124      | 13        |
| 125      | 14        |
| 128      | 15        |
| 131      | 16        |
| 132      | 17        |
| 135      | 19        |
| 136      | 20        |
| 138      | 21        |
| 139      | 22        |
| 140      | 23        |
| 141      | 24        |
| 142      | 25        |
| 144      | 26        |
| 146      | 27        |
| 148      | 28        |
| 150      | 29        |
| 152      | 30        |
| 153      | 31        |
| 154      | 32        |

|    |       |
|----|-------|
| 33 | 155   |
| 34 | 156   |
| 35 | 157   |
| 36 | 160   |
| 37 | 162   |
| 38 | 163   |
| 39 | 163.4 |
| 40 | 165   |
| 41 | 166   |
| 42 | 167   |
| 43 | 168   |
| 44 | 169   |
| 45 | 170   |
| 46 | 171   |
| 47 | 172   |
| 48 | 173   |
| 49 | 174   |
| 50 | 175   |
| 51 | 176.7 |
| 52 | 178   |
| 53 | 179   |
| 54 | 180   |
| 55 | 181   |
| 56 | 182   |
| 57 | 183   |
| 58 | 185   |
| 59 | 186   |
| 60 | 187   |
| 61 | 188   |
| 62 | 190   |
| 63 | 191   |
| 64 | 192   |

|     |         |     |     |
|-----|---------|-----|-----|
| 65  | 193     | 101 | 234 |
| 66  | 193     | 102 | 235 |
| 67  | 196     | 103 | 236 |
| 68  | 19      | 104 | 237 |
| 69  | 198     | 105 |     |
| 70  | 196 200 | 106 |     |
| 71  | 197 201 | 107 | 237 |
| 72  | -       | 108 |     |
| 73  | -       | 109 | 243 |
| 74  | -       | 110 | 244 |
| 75  | 206     | 111 | 245 |
| 76  | 207     | 112 | 246 |
| 77  | 208     | 113 | 8   |
| 78  | 210     | 114 | 9   |
| 79  | 211     | 115 | 257 |
| 80  | 212     | 116 | 25  |
| 81  | 213     | 117 | 25  |
| 82  | 214     | 118 | 253 |
| 83  | 215     | 119 | 254 |
| 84  | 216     | 120 | 255 |
| 85  | 220 218 | 121 | 256 |
| 86  | 219     | 122 | 257 |
| 87  | 220     | 123 | 258 |
| 88  | 222     | 124 | 259 |
| 89  | 223     | 125 |     |
| 90  | 224     | 126 | 260 |
| 91  | 222 216 |     |     |
| 92  | 225 217 |     |     |
| 93  | 226 218 |     |     |
| 94  | 229     |     |     |
| 95  | 230     |     |     |
| 96  | 231     |     |     |
| 97  |         |     |     |
| 98  | 232     |     |     |
| 99  |         |     |     |
| 100 | 233     |     |     |

Constants for spectrum of  $\alpha$  Orionis

1.  $\lambda_1$  4101.74
2.  $\lambda_2$  4215.52
3.  $\lambda_3$  4861.33
4.  $\lambda_2 - \lambda_1$  113.78 ✓✓
5.  $\lambda_3 - \lambda_2$  645.81 ✓✓
6.  $n_1$  342990
7.  $n_2$  370171
8.  $n_3$  482996
9.  $n_2 - n_1$  27181 ✓✓
10.  $n_3 - n_2$  112825 ✓✓
11.  $\textcircled{9} \div \textcircled{9}$   $[\bar{3}.6218005]$  418601
12.  $\textcircled{5} \div \textcircled{10}$   $[\bar{3}.7576994]$  5722997
13.  $\textcircled{11} \div \textcircled{12}$   $[\bar{1}.8641011]$  0.73.1309 ✓
14.  $\bar{1} - (13)$  0.26869 ✓  $[\bar{4}.42925^{31}_{15}]$  ✓
15.  $(6) \times (13)$   $[\bar{5}.3993826]$  250832 250831673910
16.  $(8) - (15)$   $[\bar{5}.3657949]$  2321644 ✓✓  
~~4292515~~
17.  $(16) \div (14)$   $[\bar{5}.5328166]$  ~~341048 (no)~~  $[\bar{5}.93654^{50}_{34}]$  864057 ✓
18.  $(17) - (6)$   $[\bar{3}.2884492n]$  ~~001942~~ 521067 522076 ✓✓  $[\bar{5}.7177^{320}_{287}]$  ✓
19.  $(17) - (7)$   $[\bar{4}.4642361n]$  ~~029123~~ 493886 493889 ✓✓  $[\bar{5}.6936^{328}_{292}]$  ✓
20.  $(17) - (8)$   $[\bar{5}.1521293n]$  ~~141948~~ 381061 382064 ✓✓  $[\bar{5}.5821^{465}_{162}]$  ✓
21.  $\lambda_1$  4101.74
22.  $(11) \times (19)$  ~~121909~~  $[\bar{2}.0860366n]$  ~~2067.42~~ 2067.4017  $[\bar{3}.3154307]$
23.  $(21) - (22)$  ~~423.65~~ ~~2034.27~~  $(\lambda_0)$  ~~2034.32~~ 2034.33
24.  $(22) \times (18)$   $[\bar{5}.3742858]$   $(6_0)$   $[\bar{9}.0331594]$  10772591
25.  $(24) - (20)$  ~~1.66784~~  $[\bar{0}.2221565]$  ~~2823.082~~  $[\bar{3}.45102^{23}_{78}]$  282679
26.  $(23) + (25)$   $\lambda_3$  4861.32

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$$\lambda_0 = 2035.84 \quad n_0 = -183358 \quad C = -107283633$$

$\beta$  Geminorum  $\downarrow$  C 18790

| No. | n      | 183358+n | $\lambda$ |
|-----|--------|----------|-----------|
| 25  | 397060 | 580418   | 3884.22   |
| 26  | 395772 | 579130   | 3888.33   |
| 27  | -      | -        |           |
| 28  | 392928 | 576286   | 3897.47   |
| 29  | 391709 | 575067   | 3900.42   |
| 30  | 390622 | 573980   | 3904.94   |
| 31  | 389660 | 573018   | 3908.09   |
| 32  |        | -        |           |
| 33  |        | -        |           |
| 34  | 385166 | 568524   | 3922.89   |
| 35  | 381739 | 565097   | 3934.33   |
| 36  | 378379 | 561737   | 3945.69   |
| 37  | 377238 | 560596   | 3949.58   |
| 38  | 375969 | 559327   | 3954.92   |
| 39  | 374890 | 558248   | 3957.62   |
| 40  | 373455 | 556813   | 3962.58   |
| 41  | 371672 | 555030   | 3968.77   |
| 42  | 367178 | 550536   | 3984.55   |
| 43  | 365294 | 548652   | 3991.24   |
| 44  | 363319 | 546677   | 3998.30   |
| 45  | 361038 | 544396   | 4006.52   |
| 46  | -      | -        |           |
| 47  | -      | -        |           |
| 48  | -      | -        |           |
| 49  | -      | -        |           |
| 50  | 353756 | 537114   | 4033.24   |
| 51  | 351591 | 534949   | 4040.33   |
| 52  | 350320 | 533678   | 4046.10   |
| 53  | 347856 | 531214   | 4055.43   |

↓  
183358  
+w

λ

|           |        |        |                       |
|-----------|--------|--------|-----------------------|
| 54        | 346970 | 530328 | 4058.80               |
| 55        | 345600 | 528958 | 4064.04               |
| 56        | 343529 | 526887 | 4072.01               |
| 57        | 342051 | 525409 | 4077.74               |
| 58        | 340284 | 523642 | 4084.63               |
| 59        | 338698 | 522056 | 4090.86               |
| 60        | 337201 | 520559 | 4096.76               |
| 4101 61   | 335949 | 519307 | 4101.73               |
| 62        | 333830 | 517188 | 4110.00               |
| 63        | 331699 | 515057 | 4116.84               |
| 64        | 331040 | 514398 | 4121.45               |
| 65        | 330369 | 513727 | 4124.17               |
| 66        | 328091 | 511449 | 4133.48               |
| 67        | 325608 | 508966 | 4143.75               |
| 68        | 323874 | 507232 | 4150.82               |
| 69        | 322638 | 505996 | 4156.08               |
| 70        | 321537 | 504895 | 4160.71               |
| 71        | 320051 | 503409 | 4166.98               |
| 72        | 318751 | 502109 | 4172.50               |
| 73        | 316512 | 499870 | 4182.07               |
| 74        | 315348 | 498706 | 4187.08               |
| 75        | 304407 | 497765 | <del>42</del> 4191.14 |
| 76        | 313180 | 496538 | 4196.47               |
| 77        | 311769 | 495127 | 4202.63               |
| 78        | 309839 | 493197 | 4211.10               |
| *4215 79  | 308841 | 492199 | 4215.51               |
| (4227) 80 | 306391 | 489749 | 4226.42               |
| 81        | 304120 | 487478 | 4236.62               |
| 82        | 301300 | 484658 | 4249.43               |
| 83        | 300231 | 483589 | 4254.32               |
| 84        | 299049 | 482407 | 4259.76               |

4340

|     | $\beta$ <i>seminorum</i> | $\gamma$ |         |
|-----|--------------------------|----------|---------|
|     | $\frac{183358}{n}$       |          |         |
| 85  | 296400                   | 479758   | 4272.04 |
| 86  | 294651                   | 478009   | 4280.22 |
| 87  | 292516                   | 475874   | 4290.29 |
| 88  | 290591                   | 473949   | 4299.45 |
| 89  | 288775                   | 472133   | 4308.15 |
| 90  | 285338                   | 468796   | 4324.33 |
| 91  | 283979                   | 467387   | 4331.47 |
| 92  | 282527                   | 465885   | 4338.63 |
| 93  | 279826                   | 463184   | 4352.06 |
| 94  | 278284                   | 460642   | 4364.84 |
| 95  | 276676                   | 460034   | 4367.92 |
| 96  | 275494                   | 458852   | 4373.92 |
| 97  | 273534                   | 456892   | 4383.95 |
| 98  | 272500                   | 455858   | 4389.28 |
| 99  | 270511                   | 453869   | 4399.59 |
| 100 | 269429                   | 452787   | 4405.24 |
| 101 | 267507                   | 450865   | 4415.34 |
| 102 | 265918                   | 449276   | 4423.76 |
| 103 | 263649                   | 447007   | 4435.88 |
| 104 | 262579                   | 445937   | 4441.64 |
| 105 | 260936                   | 444294   | 4450.53 |
| 106 | 259602                   | 442960   | 4457.81 |
| 107 | 257440                   | 440798   | 4469.69 |
| 108 | 255461                   | 438819   | 4480.66 |
| 109 | 253940                   | 437298   | 4489.16 |
| 110 | 252865                   | 436223   | 4495.21 |
| 111 | 249409                   | 432767   | 4514.85 |
| 112 | 246908                   | 430266   | 4529.96 |
| 113 | 244079                   | 427437   | 4545.76 |
| 114 | 242915                   | 426273   | 4552.62 |

|          |         | 183358 + m | $\lambda$              |
|----------|---------|------------|------------------------|
| 115      | 241200  | 424558     |                        |
| 116      | 238034  | 421392     | 4562.78                |
| 117      | 235121  | 418479     | 4599.49                |
| 118      | 228780? | 412138?    | 4638.94                |
| 119      | 227386  | 410744     | 4647.77                |
| 120      | 225979  | 409337     | 4656.75                |
| 121      | 224459  | 407817     | 4666.58                |
| 122      | 220331  | 403689     | 4693.42                |
| 123      | 217370  | 400728     | 4713.05                |
| 124      | 215032  | 398390     | 4729.77                |
| 125      | 209671  | 393029     | 464765.50              |
| 126      | 206578  | 389876     | 4787.57                |
| 127      | 198951  | 382309     | 4842.04                |
| 4861 128 | 196341  | 379699     | 4861.33                |
| 129      | 194853  | 378211     | 4872.44                |
| 130      | 192751  | 376109     | 4888.30                |
| 131      | 189897  | 373255     | 49 <sup>10</sup> 09.11 |
| 132      | 188460  | 371818     | 4921.22                |
| 133      | -186231 | 369589     | 4938.62                |
| 134      | -183748 | 367106     | 4958.25                |
| 135      | -180847 | 364205     | 4981.53                |
| 136      |         | -          |                        |
| 137      | -173718 | 357076     | 5040.34                |

$$m_0 = -500727$$

$$\lambda_0 = 2057.26$$

$$c = 21117884$$

Arcturus C18416

Reading

| No. | n      | 500727+n          | $\lambda$ |
|-----|--------|-------------------|-----------|
| 1   | 656551 | <del>511382</del> | $\lambda$ |
| 2   | 654529 | 1155256           | 3875.24   |
| 3   | 657852 | 1152579           | 3889.49   |
| 4   | 650024 | 1150751           | 3892.40   |
| 5   | 646151 | 1146878           | 3898.59   |
| 6   | 644252 | 1144979           | 3901.65   |
| 7   | 643517 | 1144244           | 3 —       |
| 8   | 641661 | 1142388           | 3905.83   |
| 9   | 639758 | 1140485           | 3908.91   |
| 10  |        |                   |           |
| 11  |        |                   |           |
| 12  |        |                   |           |
| 13  |        |                   |           |
| 14  |        |                   |           |
| 15  |        |                   |           |
| 16  | 630833 | 1131560           | 3923.52   |
| 17  | 629459 | 1130186           | 3925.79   |
| 18  | 628461 | 1129188           | 3927.44   |
| 19  | 626199 | 1126926           | 3931.19   |
| 20  | 623761 | 1124488           | 3934.37   |
| 21  | 617098 | 1117825           | 3946.45   |
| 22  | 614680 | 1115407           | 3950.54   |
| 23  | 614067 | 1114794           | 3951.59   |
| 24  | 612228 | 1112955           | 3954.72   |
| 25  | 610037 | 1110764           | 3958.46   |
| 26  | 608782 | 1109509           | 3960.61   |
| 27  | 607138 | 1107865           | 3963.48   |
| 28  | 603226 | 1103953           | 3970.19   |
| 29  | 598132 | 1098859           | 3979.06   |

3887.399

3898.540

3869.960

3894.76

3898.88

3886.47

3884.791

3877.853

3879.897

3875.220

3863.344

3859.459

3858.590

3855.670

3852.963

3959.584

3956.368

3969.893

3978.961

3944

|         | $n$                                          | $500727+n$ | (and so on, over the page) | Reading                                              |
|---------|----------------------------------------------|------------|----------------------------|------------------------------------------------------|
| 30      | 597103                                       | 1097830    | $39^{\frac{1}{2}}80.86$    | $397 \underline{9.562}$                              |
| 31      | 595799                                       | 1096526    | 3983.15                    | $397 \underline{79.59}$                              |
| 32      | 593835                                       | 1094562    | 3986.60                    | $397 \underline{3.595}$                              |
| 33      | 592774                                       | 1093501    | 3988.47                    | 30                                                   |
| 34      | 591160                                       | 1091887    | 3991.33                    | $398 \underline{8.262}$                              |
| 35      | 589884                                       | 1090611    | 3993.59                    | $398 \underline{6.595}$                              |
| 36      | 588350                                       | 1089077    | 3996.32                    | $398 \underline{3.272}$                              |
| 37      | 586342                                       | 1087069    | 3999.90                    | $399 \underline{98.4}$                               |
| 38      | 584980                                       | 1085707    | 4002.34                    | $399 \underline{7.251}$                              |
| 39      | 584259                                       | 1084986    | 4003.63                    | $399 \underline{6.563}$                              |
| 40      | 582422                                       | 1083149    | 4006.86                    | $399 \underline{3.864}$                              |
| 41      | 580339                                       | 1081066    | 4009.69                    | $399 \underline{9.691}$                              |
| 42      | 578974                                       | 1079701    | 4013.16                    | $399 \underline{7.861}$                              |
| 43      | 577661                                       | 1078388    | 4015.54                    | $399 \underline{4.452}$                              |
| 44      | 570812                                       | 1071540    | 4028.05 +                  | $397 \underline{79.47}$                              |
| 45      | 573826                                       | 1074553    | 4022.53                    | $398 \underline{7.461}$                              |
| 46      | 573322                                       | 1074049    | 4023.45                    | $398 \underline{6.343}$                              |
| 47      | 572081                                       | 1072808    | 4025.72                    | $398 \underline{4.678}$                              |
| 48      | 570750                                       | 1071477    | 4028.17                    | $397 \underline{7.873}$                              |
| 49      | 568747                                       | 1069494    | 4031.82                    | $397 \underline{8.777}$                              |
| 50      | 567440                                       | 1068167    | 4034.28                    | $397 \underline{5.280}$                              |
| 51      | 563288                                       | 1064015    | 4041.99                    | $396 \underline{8.996}$                              |
| 52      | 560680                                       | 1061407    | 4046.87                    | $396 \underline{8.872}$                              |
| 53      | 558872                                       | 1059599    | 4050.27                    | $395 \underline{9.267}$                              |
| 54      | 557069                                       | 1057796    | 4053.66                    | $395 \underline{6.664}$                              |
| 55      | 555979                                       | 1056706    | 4055.72                    | $395 \underline{4.673}$                              |
| 56      | 554363                                       | 1055090    | 4058.78                    | $500 \underline{55.84}$<br>$405 \underline{87.84}$ ? |
| 57      | 551379                                       | 1052106    | 4064.46                    | $405 \underline{5.460}$                              |
| 58      | 549653                                       | 1050380    | 4067.75                    | $406 \underline{7.649}$                              |
| 59      | 547240                                       | 1047967    | 4072.39                    | $406 \underline{7.388}$                              |
| mean 60 | $\begin{cases} 544742 \\ 544169 \end{cases}$ | 1045183    | 4077.75                    | $407 \underline{7.646}$                              |

|    | Arcturus           | <sup>500727 + m</sup> | $\lambda$                    | Reading  |
|----|--------------------|-----------------------|------------------------------|----------|
| 61 | 541297             | 104 2024              | 4083.88                      | 4076.88  |
| 62 | 539910             | 104 0637              | 4086.58                      | 4073.58  |
| 63 | 537630             | 103 8357              | ✓ 4090.03                    | 4089 96  |
| 64 | 536551             | 103 7278              | ✓ 4093.15                    | 4087 94  |
| 65 | 534789             | 103 5516              | ✓ 4096.63                    | 4083 56  |
| 66 | 532195             | 103 2922              | ✓ 4098.74                    | 4098 65  |
| 67 | 530439             | 103 1166              | ✓ 4105.17                    | 4095 87  |
| 68 | 528969             | 102 9696              | ✓ 4108.14                    | 40979 5  |
| 69 | 527888             | 102 8615              | ✓ 4110.30                    | 4099 29  |
| 70 | 526827             | 102 7554              | ✓ 4112.41                    | 4097 38  |
| 71 | { 525389<br>524597 | 102 5720              | ✓ 4116.09                    | 4094 99  |
| 72 | 523566             | 102 4293              | ✓ 4118.96                    | 4088962  |
| 73 | 522078             | 102 2805              | ✓ 4121.96                    | 4088 96  |
| 74 | 521110             | 102 1837              | ✓ 4123.91                    | 4086 88  |
| 75 | 519981             | 102 0708              | ✓ 4126.20                    | 4084 89  |
| 76 | 519056             | 101 9783              | ✓ 4128.07                    | 407797   |
| 77 | 518117             | 101 8844              | ✓ 4129.99                    | 4079989  |
| 78 | 516935             | 101 7662              | ✓ 4132.39                    | 4077 39  |
| 79 | 515819             | 101 6546              | ✓ 4134.67                    | 4075 67  |
| 80 | 514500             | 101 5227              | ✓ 4137.37                    | 406737   |
| 81 | 511609             | 101 2986              | ✓ 4143.31                    | 4066 28  |
| 82 | 508517             | 100 9244              | ✓ <del>4153.86</del> 4149.70 | 4059 869 |
| 83 | 507347             | 100 8074              | ✓ 4152.13                    | 405896   |
| 84 | 506319             | 100 7046              | ✓ 4155.27                    | 4055 27  |
| 85 | 505214             | 100 5941              | ✓ 4156.57                    | 4053 57  |
| 86 | 502841             | 100 3568              | ✓ 4151.53                    | 415846   |
| 87 | 501278             | 100 2005              | ✓ 4164.82                    | 415572   |
| 88 | 500021             | 100 0748              | ✓ 4167.46                    | 4167 46  |
| 89 | 499162             | 99 9889               | ✓ 4169.28                    | 4169 28  |
| 90 | 497639             | 99 8366               | ✓ 4172.50                    | 416749   |

|      |     | 500 727 +2 | 2                | Reading |
|------|-----|------------|------------------|---------|
|      | 91  | 495203     | 995930 ✓ 4177.67 | 417767  |
|      | 92  | 493171     | 993898 ✓ 4182.01 | 417898  |
|      | 93  | 490739     | 991466 ✓ 4187.22 | 417387  |
|      | 94  | 488839     | 989566 ✓ 4191.31 | 418828  |
|      | 95  | 486399     | 987126 ✓ 4196.58 | 418358  |
|      | 96  | 485701     | 986428 ✓ 4198.00 | 419799  |
|      | 97  | 483961     | 984688 ✓ 4201.88 | 419888  |
|      | 98  | 482689     | 983416 ✓ 4204.65 | 419554  |
|      | 99  | 481798     | 982525 ✓ 4206.60 | 419359  |
|      | 100 | 480327     | 981054 ✓ 4209.77 | 419977  |
| 4215 | 101 | 477741     | 978468 ✓ 4215.51 | 419448  |
|      | 102 | 472717     | 973444 ✓ 4226.65 | 418354  |
|      | 103 | 471431     | 972158 ✓ 4229.52 | 417947  |
|      | 104 | 469988     | 970715 ✓ 4232.75 | 417764  |
|      | 105 | 468753     | 969480 ✓ 4235.52 | 417447  |
|      | 106 | 466947     | 967674 ✓ 4239.59 | 416959  |
|      | 107 | 465608     | 966335 ✓ 4242.61 | 416758  |
|      | 108 | 464601     | 965328 ✓ 4244.86 | 416573  |
|      | 109 | 468269     | 968996 ✓ 4247 —  | 417358  |
|      | 110 | 462359     | 968086 ✓ 4249.95 | 415984  |
|      | 111 | 460659     | 961886 ✓ 4253.83 | 415626  |
|      | 112 | 458838     | 959565 ✓ 4258.00 | 425799  |
|      | 113 | 458036     | 958763 ✓ 4259.84 | 425975  |
|      | 114 | 456215     | 956942 ✓ 4264.03 | 425696  |
|      | 115 | 454763     | 955490 ✓ 4267.39 | 426739  |
|      | 116 | 453140     | 953867 ✓ 4271.04 | 426995  |
|      | 117 | 451836     | 952563 ✓ 4273.18 | 426688  |
|      | 118 | 450820     | 951547 ✓ 4276.54 | 426345  |
|      | 119 | 449419     | 950146 ✓ 4279.82 | 427977  |
|      | 120 | 448458     | 949185 4282.07   | 427897  |

|          | Arcturus 500727+~ |            | Reading |
|----------|-------------------|------------|---------|
| 121      | 447061            | 947788 ✓   | 4274.36 |
| 122      | 445542            | 946269 ✓   | 4288.87 |
| 123      | 444803            | 945530 ✓   | 4289.69 |
| 124      | 443604            | 944831 ✓   | 4286.46 |
| 125      | 441260            | 941987 ✓   | 4298.99 |
| 126      | 440040            | 940767 ✓   | 4298.98 |
| 127      | 438935            | 939662 ✓   | 4295.54 |
| 128      | 437908            | 938635 ✓   | 4293.98 |
| 129      | 437121            | 937848 ✓   | 4298.99 |
| 130      | 436002            | 936729 ✓   | 4298.68 |
| 131      | 435159            | 935886 ✓   | 4296.68 |
| 132      | (434132)          | (934859) ✓ | 1       |
| 133      | 433370            | 934097 ✓   | 4287.95 |
| 134      | 432631            | 933368 ✓   | 4289.76 |
| 135      | 431501            | 932228 ✓   | 4287.57 |
| 136      | 430603            | 931330 ✓   | 4285.64 |
|          | 428564            | 929291 ✓   | 4279.66 |
| 137      | 427360            | 928087 ✓   | 4277.68 |
|          |                   | 4332.68    | 4273.97 |
| 138      | 425572            | 926299 ✓   | 4269.46 |
| 4340 139 | 424601            | 925328 ✓   | 4267.89 |
| 140      | 423089            | 923816 ✓   | 4263.36 |
| 141      | 421782            | 922509 ✓   | 4259.97 |
| 142      | 419928            | 920645 ✓   | 4255.66 |
| 143      | 418449            | 919176 ✓   | 4358.57 |
| 144      | 416916            | 917643 ✓   | 4357.38 |
| 145      | 415388            | 916115 ✓   | 4353.95 |
| 146      | 413511            | 914238 ✓   | 4369.58 |
| 147      | 412549            | 913276 ✓   | 4265.39 |
| 148      | 410650            | 911377 ✓   | 4378.88 |
| 149      | 408877            | 909604 ✓   | 4377.97 |
| 150      | 407289            | 908016 ✓   |         |

500727+~

|     |                    |                    |                     |                                      |
|-----|--------------------|--------------------|---------------------|--------------------------------------|
| 151 | 405718             | 906445             | 438 <del>6</del> 01 | 437 <u>3.99</u> 7                    |
| 152 | 404660             | 905387             | 4389.72             | 438 <u>96</u> 79                     |
| 153 | 402820             | 903547             | 4394.48             | 438 <u>5</u> 480                     |
| 154 | 400570             | 900297             | 4402.91             | 439 <u>788</u> 7                     |
| 155 | 399176             | 899903             | 4403.94             | 439 <u>685</u> 4                     |
| 156 | 397728             | 898455             | 4407.72             | 439 <u>267</u> 6                     |
| 157 | 396321             | 897048             | 4411.41             | 439 <u>838</u> 3                     |
| 158 | 395222             | 895949             | 4414.30             | 439 <u>6790</u>                      |
| 159 | 394352             | 895079             | 4416.59             | 43 <u>93</u> 591                     |
| 160 | 392581             | 893308             | 4421.26             | 438 <u>82</u> 69                     |
| 161 | 392352             | 893079             | 4421.87             | 438 <u>8875</u>                      |
| 162 | 391269             | 891996             | 4424.74             | 438 <u>565</u> 6                     |
| 163 | 390635             | 890362             | 4429.09             | 437 <u>899</u> 1                     |
| 164 | 389550             | 889277             | 4431.98             | 437 <u>8984</u>                      |
| 165 | 387443             | 888160             | 4434.97             | 437 <u>597</u> 1                     |
| 166 | 383279             | 884006             | 4446.14             | 436 <u>495</u> 4                     |
| 167 | 382227             | 882954             | 4448.98             | 43 <u>5898</u> 9                     |
| 168 | 380863             | 881090             | 4454.05             | 435 <u>695</u> 9                     |
| 169 | 378729             | 879456             | 4458.50             | 435 <u>149</u> 3                     |
| 170 | 377843             | 878570             | 4460.92             | 43 <u>4987</u> 5                     |
| 171 | 376740             | 877467             | 4463.94             | 43 <u>4685</u> 6                     |
| 172 | 375201             | 875928             | 4468.17             | 43 <u>4287</u> 5                     |
| 173 | 373041             | 873768             | 4474.13             | 446 <u>696</u> 5                     |
| 174 | { 371269<br>370405 | { 871996<br>871132 | 4481.54<br>4481.44  | 447 <u>845</u> 8<br>447 <u>833</u> 8 |
| 175 | 367862             | 868589             | 4489.54             | 447 <u>148</u> 5                     |
| 176 | 366092             | 866819             | 4493.51             | 448 <u>648</u> 0                     |
| 177 | 365420             | 866147             | 4495.40             | 448 <u>569</u> 1                     |
| 178 | 363584             | 864311             | 4500.57             | 449 <u>957</u> 9                     |
| 179 | 358901             | 859628             | 4503.88             | 449 <u>688</u> 9                     |
| 180 | 357898             | 858625             | 4516.75             | 449 <u>364</u> 9                     |
| 181 | 356051             | 856778             | 4522.06             | 448 <u>893</u> 2                     |

## Arcturus

|     |                          | 50072742 | $\lambda$ |             |
|-----|--------------------------|----------|-----------|-------------|
| 182 | 354839                   | 855566   | 4525.55   | 4484443     |
| 183 | 354103                   | 854830   | 4527.87   | 4482878     |
| 184 | 353186                   | 853913   | 4530.23   | 4479762     |
| 185 | 357669                   | 852396   | 4534.73   | 4475663     |
| 186 | 348811                   | 849538   | 4543.06   | 4467937     |
| 187 | 348525                   | 849252   | 4543.90   | 4466895     |
| 188 | 346970                   | 847697   | 4548.46   | 4461336     |
| 189 | 345851                   | 846578   | 4551.75   | 4458649     |
| 190 | 344972                   | 845699   | 4554.35   | 4456742     |
| 191 | 343120                   | 843847   | 4559.83   | 44559762    |
| 192 | 341751                   | 842478   | 4563.90   | 4446899     |
| 193 | 339456                   | 840183   | 4570.74   | 4439656     |
| 194 | 338370                   | 839097   | 4573.99   | 4436999     |
| 195 | 336469                   | 837196   | 4599.71   | 4579683     |
| 196 | 334606                   | 835339   | 4585.34   | 4575769     |
| 197 | 331754                   | 832481   | 4594.00   | 4586990     |
| 198 | 330742                   | 831449   | 4597.14   | 4583959     |
| 199 | 329797                   | 830524   | 4599.97   | 4599827     |
| 200 | <del>328887</del> 323699 | 824426   | 4618.78   | 4591785     |
| 201 | <del>325668</del> 320425 | 821152   | 4628.99   | 4581998     |
| 202 | 317079                   | 817806   | 4639.51   | 4569489     |
| 203 |                          |          |           |             |
| 204 |                          |          |           |             |
| 205 |                          |          |           |             |
| 206 |                          |          |           |             |
| 207 |                          |          |           |             |
| 208 | 315078                   | 815805   | 4645.85   | 4564744     |
| 209 | 313391                   | 814118   | 4651.22   |             |
| 210 | 312198                   | 812925   | 4656.02   | 209 4559888 |
| 211 | <del>309766</del>        | 810493   | 4662.81   | 210 4555975 |
| 212 | 308440                   | 809167   | 4667.08   | 211 4547489 |
| 211 |                          |          |           | 4543988     |
| 212 |                          |          |           |             |

|     |        |        |           |                  |
|-----|--------|--------|-----------|------------------|
| 213 | 306327 | 807054 | 4673.92   | 45 <u>36</u> 872 |
| 214 | 304002 | 804729 | 4681.48   | 45 <u>29</u> 628 |
| 215 | 302073 | 802800 | 4687.78   | 467 <u>2788</u>  |
| 216 | 301092 | 801819 | 4690.00   | 468 <u>9996</u>  |
| 217 | 300440 | 801167 | 4693.14   | 468 <u>7959</u>  |
| 218 | 298926 | 799653 | 4698.14   | 468 <u>2969</u>  |
| 219 | 297711 | 798438 | 4702.15   | 469 <u>8949</u>  |
| 220 | 296312 | 797039 | 4706.79   | 469 <u>3798</u>  |
| 221 | 295535 | 796262 | 4709.38   | 469 <u>1687</u>  |
| 222 | 294122 | 794889 | 4714.13   | 46 <u>96965</u>  |
| 223 | 291705 | 792432 | 4722.20   | 468 <u>88575</u> |
| 224 | 290101 | 790828 | 4712.60 ? | 468 <u>2598</u>  |
| 225 | 289271 | 789998 | 4730.41   | 467 <u>9682</u>  |
| 226 | 288481 | 789208 | 4733.08   | 467 <u>7987</u>  |
| 227 | 287369 | 788096 | 4736.86   | 467 <u>3867</u>  |
| 228 | 286250 | 786777 | 4741.36   | 46 <u>69749</u>  |
| 229 |        |        |           |                  |
| 230 |        |        |           |                  |
| 231 |        |        |           |                  |
| 232 |        |        |           |                  |
| 233 |        |        |           |                  |
| 234 |        |        |           |                  |
| 235 |        |        |           |                  |
| 236 |        |        |           |                  |
| 237 |        |        |           |                  |
| 238 |        |        |           |                  |
| 239 |        |        |           |                  |
| 240 |        |        |           |                  |
| 241 |        |        |           |                  |
| 242 |        |        |           |                  |
| 243 |        |        |           |                  |

## Arcturus

|     |            |        |           |                         |
|-----|------------|--------|-----------|-------------------------|
| 486 | 244        | 754679 | 4855.53   | 47 <u>55</u> <u>570</u> |
|     | 245 253952 | 759115 | 4861.33   | 47 <u>48</u> <u>278</u> |
|     | 252388     |        |           |                         |
|     | 246 249811 | 750538 | 4870.95   | 47 <u>39</u> <u>849</u> |
|     | 247 248675 | 749402 | 4875.22   | 47 <u>35</u> <u>874</u> |
|     | 248 246851 | 747578 | 4882.09   | 47 <u>28</u> <u>99</u>  |
|     | 249 245736 | 746463 | 4886.32   | 47 <u>24</u> <u>789</u> |
|     | 250 244464 | 745191 | 4891.16   | 47 <u>19</u> <u>58</u>  |
|     | 251 242180 | 742907 | 4880.85 ? | 48 <u>07</u> <u>49</u>  |
|     | 252 241289 | 742016 | 4903.27   | 48 <u>97</u> <u>24</u>  |
|     | 253 239299 | 740026 | 4910.92   | 48 <u>99</u> <u>877</u> |
|     | 254 236972 | 737699 | 4919.92   | 48 <u>89</u> <u>879</u> |
|     | 255 235694 | 736421 | 4924.89   | 48 <u>85</u> <u>897</u> |
|     | 256 233361 | 734088 | 4934.00   | 48 <u>76</u> <u>998</u> |
|     | 257 232110 | 732837 | 4938.92   | 48 <u>71</u> <u>871</u> |
|     | 258 227294 | 728021 | 4957.98   | 48 <u>52</u> <u>814</u> |
|     | 259        |        |           |                         |
|     | 260        |        |           |                         |
|     | 261        |        |           |                         |
|     | 262        |        |           |                         |
|     | 263        |        |           |                         |
|     | 264        |        |           |                         |
|     | 265        |        |           |                         |
|     | 266        |        |           |                         |
|     | 267        |        |           |                         |
|     | 268        |        |           |                         |
|     | 269        |        |           |                         |
|     | 270 266790 | 707517 | 5042.04   | 49 <u>68</u> <u>958</u> |
|     | 271        |        |           |                         |
|     | 272        |        |           |                         |
|     | 273        |        |           |                         |

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$\lambda_0 = 2035.84$

$n_0 = -183358$

$C = -107283633$

Constants for  $\beta$  Gemmaeum

|     |                         |                           |
|-----|-------------------------|---------------------------|
| 1.  | $\lambda_1$             | 4101.74                   |
| 2.  | $\lambda_2$             | 4215.52                   |
| 3.  | $\lambda_3$             | 4861.33                   |
| 4.  | $\lambda_2 - \lambda_1$ | 113.78                    |
| 5.  | $\lambda_3 - \lambda_2$ | 645.81                    |
| 6.  | $n_1$                   | 335949                    |
| 7.  | $n_2$                   | 308841                    |
| 8.  | $n_3$                   | 196341                    |
| 9.  | $n_2 - n_1$             | -27108                    |
| 10. | $n_3 - n_2$             | -112500                   |
| 11. | $(4) \div (9)$          | $-419728 \times 10^{-3}$  |
| 12. | $(5) \div (10)$         | $-5.74053 \times 10^{-3}$ |
| 13. | $(11) \div (12)$        | 0.731166                  |
| 14. | $1 - (13)$              | 0.268834                  |
| 15. | $(6) \times (13)$       | 245634486534              |
| 16. | $(8) - (15)$            | -49293                    |
| 17. | $(16) \div (14)$        | -1833585                  |
| 18. | $(17) - (6)$            | -519307                   |
| 19. | $(17) - (7)$            | -492199                   |
| 20. | $(17) - (8)$            | -379699                   |
| 21. | $\lambda_1$             | 4101.74                   |
| 22. | $(11) \times (19)$      | 2065.90                   |
| 23. | $(21) - (22)$           | 2035.84                   |
| 24. | $(22) \times (18)$      | -107283633130             |
| 25. | $(24) \div (20)$        | 2825.49                   |
| 26. | $(23) + (25)$           | 4861.33                   |

# Constants for Arcturus

|    |                         |                           |
|----|-------------------------|---------------------------|
| 1  | $\lambda_1$             | 4101.74                   |
| 2  | $\lambda_2$             | 4215.52                   |
| 3  | $\lambda_3$             | 4861.33                   |
| 4  | $\lambda_2 - \lambda_1$ | 113.78                    |
| 5  | $\lambda_3 - \lambda_2$ | 645.81                    |
| 6  | $n_1$                   | 532195                    |
| 7  | $n_2$                   | 477741                    |
| 8  | $n_3$                   | 252388                    |
| 9  | $n_2 - n_1$             | -54454                    |
| 10 | $n_3 - n_2$             | -225353                   |
| 11 | $(4) \div (9)$          | $-2.08947 \times 10^{-3}$ |
| 12 | $(5) \div (10)$         | $-2.86577 \times 10^{-3}$ |
| 13 | $(11) \div (12)$        | +0.729112                 |
| 14 | $1 - 13$                | 0.270888                  |
| 15 | $(6) \times (13)$       | 38802976                  |
| 16 | $(8) - (15)$            | -135641                   |
| 17 | $(16) \div (14)$        | -500727                   |
| 18 | $(17) - (6)$            | -1032922                  |
| 19 | $(17) - (7)$            | -978468                   |
| 20 | $(17) - (8)$            | -753115                   |
| 21 | $\lambda_1$             | 4101.74                   |
| 22 | $(11) \times (19)$      | 204448                    |
| 23 | $(21) + (22)$           | 2057.26                   |
| 24 | $(22) \times (18)$      | 211178837056              |
| 25 | $(24) \div (20)$        | 2804.07                   |
| 26 | $(23) + (25)$           | 4861.33                   |





