

# SPECTRAL CLASSIFICATION OF SOME LONG-PERIOD AND SEMIREGULAR VARIABLES NEAR TIMES OF MAXIMUM

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(Read by P. Rybski)

**Abstract.** Spectra of 60 M-type long-period and semiregular variables, obtained near the time of maximum at Siding Spring Observatory in Australia, from 1965–1967, have been classified on the Keenan system.

Between September 1965 and November 1967, spectra of standard stars and long-period and semiregular variables near their times of maximum were obtained on the Meinel Spectrograph at Siding Spring Observatory in Australia. They cover the wavelength region 3600–5100 Å with a dispersion of 118 Å mm<sup>-1</sup> on baked Ila–O emulsion. The spectra are widened 0.25 mm. Sensitometer spots were exposed for each night of observation. The material includes 89 spectra of long-period and semiregular variables of types K and M, and 26 (mostly irregular) of types R, N and S.

The 60 variables listed below are classified on the system presented by Keenan (1966). Classifications for 41 of these stars are listed in Bidelman's catalogue of emission-line stars (1954). As seen in the diagram, there is a very good correlation between these classes and the Siding Spring classes. The radial velocities have been measured, and will be presented with further details of the spectra in Simon's doctoral dissertation.

TABLE I  
Spectral classes of long-period and semiregular variables near times of maximum<sup>a</sup>

| HD number | Name   | Spectral class | Type <sup>b</sup> | Julian date of observation, 2439000 + |
|-----------|--------|----------------|-------------------|---------------------------------------|
| 151       | SW Scl | M2e            | Sr                | 452                                   |
| 151       | SW Scl | M3             | Sr                | 814                                   |
| 409       | V Scl  | M6e            | M                 | 811                                   |
| 1115      | S Scl  | M6.5e          | M                 | 808                                   |
| 1760      | T Cet  | M4             | SRb               | 015                                   |
| 1760      | T Cet  | M4             | SRb               | 017                                   |
| 1760      | T Cet  | M4             | SRb               | 451                                   |
| 1925      | S Tuc  | M4e            | M                 | 781                                   |
| 5774      | U Tuc  | M4e            | M                 | 365                                   |
| 6592      | Z Cet  | M6e            | M                 | 810                                   |
| 6592      | Z Cet  | M6.5e          | M                 | 812                                   |
| 17491     | Z Eri  | M4e            | SRb               | 015                                   |
| 17491     | Z Eri  | M4             | SRb               | 017                                   |
| 17491     | Z Eri  | M4             | SRb               | 451                                   |
| 17895     | RR Eri | M5             | SRb               | 451                                   |

Table 1 (continued)

| HD number | Name      | Spectral class | Type <sup>b</sup> | Julian date of observation, 2439000 + |
|-----------|-----------|----------------|-------------------|---------------------------------------|
| 18242     | R Hor     | M7             | M                 | 365 <sup>e</sup>                      |
| 18242     | R Hor     | M8             | M                 | 808 <sup>d</sup>                      |
| 18949     | T Hor     | M4e            | M                 | 780                                   |
| 18949     | T Hor     | M4e            | M                 | 814                                   |
| 20646     | X Cet     | M6.5           | M                 | 346                                   |
| 24754     | T Eri     | M4e            | M                 | 810                                   |
| 25725     | V Eri     | M6.5           | SRc               | 163                                   |
| 25725     | V Eri     | M6.5           | SRc               | 451                                   |
| 29383     | R Ret     | M4e            | M                 | 164                                   |
| 29383     | R Ret     | M5e            | M                 | 780                                   |
| 30551     | R Pic     | M0e            | SRa               | 452                                   |
| 33894     | S Pic     | M6.5e          | M                 | 165                                   |
| 40913     | V 352 Ori | M6             | Lb                | 165                                   |
| 41698     | S Lep     | M5             | SRb               | 450                                   |
| 41698     | S Lep     | M4             | SRb               | 808                                   |
| 71793     | R Cha     | M4e            | M                 | 636                                   |
| 73766     | RV Hya    | M4             | SRc               | 165                                   |
| 73766     | RV Hya    | M4             | SRc               | 223                                   |
| 81137     | WY Vel    | M3e P          |                   | 165                                   |
| 81137     | WY Vel    | M3e P          |                   | 225                                   |
| 84474     | RR Hya    | M4e            | M                 | 224                                   |
| – 21°2931 | SU Hya    | M4             | SRb               | 223                                   |
| 105266    | RW Vir    | M5             | Lb                | 165                                   |
| 105266    | RW Vir    | M4             | Lb                | 224                                   |
| 109372    | BO Mus    | M4             | Lb                | 165                                   |
| 118767    | V 744 Cen | M5             | Lb                | 227                                   |
| 118767    | V 744 Cen | M5             | Lb                | 634                                   |
| 120285    | W Hya     | M7e            | SRa               | 224                                   |
| 120460    | VX Cen    | M4             | SR                | 225                                   |
| 121518    | V 412 Cen | M4             | Lb                | 635                                   |
| 138547    | RU Lib    | M0             | M                 | 633                                   |
| 149234    | X Ara     | M5             | M                 | 365                                   |
| 329889    | RX Lup    | M4e            | M                 | 226                                   |
| 152476    | RS Sco    | M6e            | M                 | 636                                   |
| 172301    | U CrA     | M2e            | M                 | 364                                   |
| 192702    | RT Sgr    | M6.5e          | M                 | 364                                   |
| 199003    | S Ind     | M6e            | M                 | 370                                   |
| 199003    | S Ind     | M4e            | M                 | 780                                   |
| 201866    | W Ind     | M4e            | SRc               | 786                                   |
| 202306    | RR Aqr    | M3e            | M                 | 752                                   |
| 207192    | R Gru     | M6.5e          | M                 | 364                                   |
| 212537    | T Gru     | M1e            | M                 | 365                                   |
| 212539    | S Gru     | M5e            | M                 | 780                                   |
| 216907    | S Aqr     | M6e            | M                 | 810                                   |
| 218541    | Y Scl     | M6.5           | SRb               | 814                                   |
| 221433    | V Phe     | M6.5e          | M                 | 780                                   |
| 224269    | R Phe     | M4e            | M                 | 752                                   |
| 224269    | R Phe     | M4e            | M                 | 782                                   |

<sup>a</sup> Including 9 observations of irregular variables

<sup>b</sup> *General Catalogue of Variable Stars*, 3rd edition

<sup>c</sup> Phase: – 106 days.

<sup>d</sup> Phase: – 72 days.

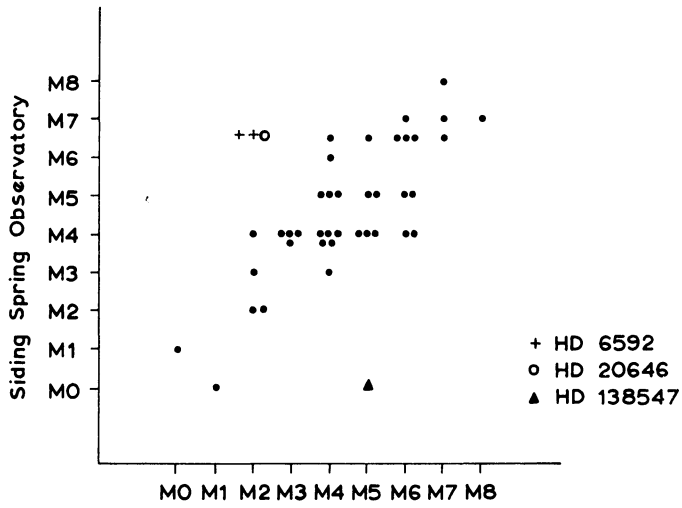


Fig. 1. Classification correlation.

### References

- Bidelman, W. P.: 1954, *Astrophys. J. Suppl. Ser.* **1**, 175.  
 Keenan, P. C.: 1966, *Astrophys. J. Suppl. Ser.* **13**, 333.