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B, V OBSERVATIONS OF RED STARS IN  
 THE NEIGHBOURHOOD OF OPEN CLUSTERS

During 1979-1983 the group of stars of late spectral classes in the neighbourhood of open clusters was observed photoelectrically with the 20-inch reflector of Ural University Observatory. Variability of M4 star signed P by Barkhatova and Vasilevsky (1967) in NGC 6819 (C 1940+4004) was confirmed. The amplitude was found equal to  $0^m.32$  for V and  $0^m.29$  for B colour. Stars in NGC 129 (C 0027+5957) signed No.2 and No.3 by Hoag et al. (1961) and Arp et al. (1959) and in NGC 1664 (C 0448+4337) No.3 by Hoag et al. (1961) were suspected in B variability. Root mean square errors for a single observation are equal to  $\pm 0^m.010$ ,  $\pm 0^m.013$  for V, B colour bands.

Results of observations are given in Tables I - III. First column contains the heliocentric times  $JD_{\odot}$  of observations and instrumental differences B and V estimations are in the next columns. The photometric system is close to that of Johnson, Morgan (see Kozhevnikov et al., 1984).

Table I  
 Photometry of NGC 6819

| $JD_{\odot}$ | $\Delta V_{P-0}$ | $\Delta B_{P-0}$ | $JD_{\odot}$ | $\Delta V_{Q-0}$ | $\Delta B_{Q-0}$ |
|--------------|------------------|------------------|--------------|------------------|------------------|
| 2444...      |                  |                  | 2444...      |                  |                  |
| 172.2654     | -0.029           | 0.372            | 172.2612     | 0.170            | -0.740           |
| .2738        | -0.020           | 0.390            | .2891        | 0.145            | -0.741           |
| .2848        | -0.029           | 0.395            |              |                  |                  |
| 186.1459     | -0.008           | 0.426            | 186.1409     | 0.166            | -0.803           |
| .1541        | 0.010            | 0.424            | .1819        | 0.170            | -0.751           |
| .1625        | 0.011            | 0.441            |              |                  |                  |
| 290.4954     | -0.004           | 0.415            | 290.4904     | 0.133            | -0.687           |
| .5043        | 0.080            | 0.414            |              |                  |                  |
| .5322        | -0.078           | 0.425            |              |                  |                  |
| 379.3002     | 0.096            | 0.493            | 379.2967     | 0.105            | -0.771           |
| .3065        | 0.106            | 0.575            | .3169        | 0.158            | -0.754           |
| .3141        | 0.080            | 0.502            |              |                  |                  |
| 497.2990     | 0.277            | 0.660            | 497.2941     | 0.182            | -0.730           |
| .3073        | 0.288            | 0.675            | .3115        | 0.194            | -0.739           |
| .3157        | 0.275            | 0.676            |              |                  |                  |

| JD <sub>☉</sub> | $\Delta V_{P-0}$ | $\Delta B_{P-0}$ | JD <sub>☉</sub> | $\Delta V_{Q-0}$ | $\Delta B_{Q-0}$ |
|-----------------|------------------|------------------|-----------------|------------------|------------------|
| 2444...         |                  |                  | 2444...         |                  |                  |
| 837.3379        | 0.088            | 0.496            | 837.3343        | 0.159            | -0.760           |
| .3447           | 0.098            | 0.478            | .3482           | 0.170            | -0.774           |
| 838.2498        | 0.099            | 0.493            | 838.2456        | 0.181            | -0.749           |
| .2568           | 0.100            | 0.478            | .2601           | 0.190            | -0.749           |
| .2636           | 0.102            | 0.482            |                 |                  |                  |
| 840.2388        | 0.085            | 0.489            | 840.2353        | 0.171            | -0.749           |
| .2458           | 0.076            | 0.465            | .2549           | 0.172            | -0.752           |
| .2514           | 0.074            | 0.490            |                 |                  |                  |
| 841.2869        | 0.068            | 0.453            | 841.2819        | 0.172            | -0.725           |
| .2945           | 0.061            | 0.411            | .2980           | 0.182            | -0.743           |
| .3022           | 0.052            | 0.432            |                 |                  |                  |
| 842.3715        | 0.053            | 0.442            | 842.3680        | 0.190            | -0.708           |
| .3798           | 0.025            | 0.449            | .3840           | 0.192            | -0.686           |
| .3875           | 0.050            | 0.465            |                 |                  |                  |
| 843.3672        | 0.074            | 0.485            | 843.3512        | 0.288            | -0.600           |
| .3797           | 0.044            | 0.476            | .3957           | 0.142            | -0.748           |
| .3901           | 0.047            | 0.469            |                 |                  |                  |
| 2445...         |                  |                  | 2445...         |                  |                  |
| 183.3846        | 0.147            | 0.580            | 183.3794        | 0.187            | -0.728           |
| .3959           | 0.158            | 0.570            | .4118           | 0.194            | -0.709           |
| .4068           | 0.164            | 0.573            |                 |                  |                  |
| 208.4123        | 0.264            | 0.633            | 208.4061        | 0.037            | -0.812           |
| .4241           | 0.124            | 0.552            | .4412           | 0.090            | -0.829           |
| .4355           | 0.172            | 0.642            |                 |                  |                  |
| 223.1992        | -0.032           | 0.394            | 223.1970        | 0.186            | -0.788           |
| .2025           | -0.034           | 0.383            | .2080           | 0.170            | -0.775           |
| .2065           | -0.037           | 0.401            |                 |                  |                  |

Note.- P is the variable star, O - comparison star, Q - check star,  
(See Barkhatova and Vasilevsky, 1967)

Table II

| JD <sub>☉</sub> | Photometry of NGC 129 |                  |                  |                  |                  |                  |
|-----------------|-----------------------|------------------|------------------|------------------|------------------|------------------|
|                 | $\Delta V_{2-5}$      | $\Delta B_{2-5}$ | $\Delta V_{3-5}$ | $\Delta B_{3-5}$ | $\Delta V_{7-5}$ | $\Delta B_{7-5}$ |
| 2444...         |                       |                  |                  |                  |                  |                  |
| 172.3238        | -0.300                | 0.625            |                  |                  |                  |                  |
| .3293           |                       |                  | -0.115           | 0.693            |                  |                  |
| .3389           | -0.298                | 0.626            |                  |                  |                  |                  |
| .3431           |                       |                  | -0.115           | 0.702            |                  |                  |
| 186.2163        |                       |                  |                  |                  | 0.415            | -0.058           |
| .2218           | -0.261                | 0.687            |                  |                  |                  |                  |
| .2259           |                       |                  | -0.138           | 0.628            |                  |                  |
| .2351           | -0.273                | 0.663            |                  |                  |                  |                  |
| .2391           |                       |                  | -0.133           | 0.633            |                  |                  |
| .2483           | -0.276                | 0.664            |                  |                  |                  |                  |
| .2524           |                       |                  | -0.144           | 0.635            |                  |                  |
| .2566           |                       |                  |                  |                  | 0.429            | -0.051           |

| JD <sub>o</sub> | $\Delta V_{2-5}$ | $\Delta B_{2-5}$ | Table II (continued) |                  | $\Delta V_{7-5}$ | $\Delta B_{7-5}$ |
|-----------------|------------------|------------------|----------------------|------------------|------------------|------------------|
|                 |                  |                  | $\Delta V_{3-5}$     | $\Delta B_{3-5}$ |                  |                  |
| 2444...         |                  |                  |                      |                  |                  |                  |
| 263.1269        |                  |                  |                      |                  | 0.416            | -0.083           |
| .1372           |                  |                  | -0.152               | 0.637            |                  |                  |
| .1518           | -0.294           | 0.714            |                      |                  |                  |                  |
| .1560           |                  |                  | -0.132               | 0.709            |                  |                  |
| .1651           | -0.301           | 0.686            |                      |                  |                  |                  |
| .1692           |                  |                  | -0.134               | 0.675            |                  |                  |
| .1755           |                  |                  |                      |                  | 0.405            | -0.092           |
| 264.1213        |                  |                  |                      |                  | 0.465            | -0.030           |
| .1269           | -0.267           | 0.704            |                      |                  |                  |                  |
| .1304           |                  |                  | -0.124               | 0.695            |                  |                  |
| .1379           | -0.271           | 0.680            |                      |                  |                  |                  |
| .1421           |                  |                  | -0.146               | 0.667            |                  |                  |
| .1498           | -0.283           | 0.660            |                      |                  |                  |                  |
| .1532           |                  |                  | -0.136               | 0.659            |                  |                  |
| .1617           | -0.314           | 0.646            |                      |                  |                  |                  |
| .1651           |                  |                  | -0.155               | 0.647            |                  |                  |
| .1685           |                  |                  |                      |                  | 0.449            | -0.020           |
| 276.1947        |                  |                  |                      |                  | 0.438            | -0.028           |
| .2017           | -0.282           | 0.645            |                      |                  |                  |                  |
| .2059           |                  |                  | -0.146               | 0.621            |                  |                  |
| .2156           | -0.303           | 0.612            |                      |                  |                  |                  |
| .2196           |                  |                  | -0.161               | 0.588            |                  |                  |
| .2245           |                  |                  |                      |                  | 0.384            | -0.091           |
| 277.1282        |                  |                  |                      |                  | 0.412            | -0.074           |
| .1326           | -0.279           | 0.653            |                      |                  |                  |                  |
| .1371           |                  |                  | -0.124               | 0.638            |                  |                  |
| .1458           | -0.274           | 0.674            |                      |                  |                  |                  |
| .1504           |                  |                  | -0.146               | 0.630            |                  |                  |
| .1597           | -0.280           | 0.649            |                      |                  |                  |                  |
| .1639           |                  |                  | -0.155               | 0.605            |                  |                  |
| .1687           |                  |                  |                      |                  | 0.403            | -0.061           |
| 290.2238        |                  |                  |                      |                  | 0.413            | 0.015            |
| .2288           | -0.284           | 0.685            |                      |                  |                  |                  |
| .2335           |                  |                  | -0.136               | 0.645            |                  |                  |
| .2447           | -0.253           | 0.658            |                      |                  |                  |                  |
| .2524           |                  |                  | -0.122               | 0.640            |                  |                  |
| .2620           | -0.265           | 0.645            |                      |                  |                  |                  |
| .2670           |                  |                  | -0.118               | 0.638            |                  |                  |
| .2718           |                  |                  |                      |                  | 0.430            | -0.041           |
| 497.3669        |                  |                  |                      |                  | 0.432            | -0.044           |
| .3711           | -0.284           | 0.639            |                      |                  |                  |                  |
| .3745           |                  |                  | -0.126               | 0.641            |                  |                  |
| .3850           | -0.278           | 0.644            |                      |                  |                  |                  |
| .3892           |                  |                  | -0.144               | 0.832            |                  |                  |
| .3981           | -0.283           | 0.637            |                      |                  |                  |                  |
| .4023           |                  |                  | -0.129               | 0.646            |                  |                  |
| .4066           |                  |                  |                      |                  | 0.419            | -0.046           |
| 678.4114        |                  |                  |                      |                  | 0.410            | -0.038           |
| .4156           |                  |                  | -0.142               | 0.601            |                  |                  |
| .4191           | -0.276           | 0.612            |                      |                  |                  |                  |
| .4378           |                  |                  | -0.144               | 0.590            |                  |                  |
| .4414           | -0.286           | 0.606            |                      |                  |                  |                  |
| .4497           |                  |                  | -0.133               | 0.586            |                  |                  |

Table II (continued)

| JD <sub>o</sub> | $\Delta V_{2-5}$ | $\Delta B_{2-5}$ | $\Delta V_{3-5}$ | $\Delta B_{3-5}$ | $\Delta V_{7-5}$ | $\Delta B_{7-5}$ |
|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 2444...         |                  |                  |                  |                  |                  |                  |
| 678.4539        | -0.286           | 0.592            |                  |                  |                  |                  |
| .4580           |                  |                  |                  |                  | 0.413            | -0.042           |
| 837.3831        | -0.291           | 0.748            |                  |                  |                  |                  |
| .3864           |                  |                  | -0.184           | 0.589            |                  |                  |
| .3942           | -0.303           | 0.627            |                  |                  |                  |                  |
| .3968           |                  |                  | -0.187           | 0.579            |                  |                  |
| 838.3380        |                  |                  |                  |                  | 0.420            | -0.042           |
| .3512           | -0.283           | 0.627            |                  |                  |                  |                  |
| .3539           |                  |                  | -0.161           | 0.580            |                  |                  |
| .3601           | -0.285           | 0.652            |                  |                  |                  |                  |
| .3630           |                  |                  | -0.108           | 0.644            |                  |                  |
| .3730           | -0.335           | 0.585            |                  |                  |                  |                  |
| .3733           |                  |                  | -0.197           | 0.544            |                  |                  |
| .3769           |                  |                  |                  |                  | 0.606            | -0.018           |
| 840.3249        |                  |                  |                  |                  | 0.385            | -0.096           |
| .3284           | -0.290           | 0.612            |                  |                  |                  |                  |
| .3326           |                  |                  | -0.175           | 0.598            |                  |                  |
| .3387           | -0.270           | 0.687            |                  |                  |                  |                  |
| .3470           |                  |                  | -0.162           | 0.593            |                  |                  |
| .3540           | -0.259           | 0.670            |                  |                  |                  |                  |
| .3561           |                  |                  | -0.164           | 0.599            |                  |                  |
| .3597           |                  |                  |                  |                  | 0.445            | -0.029           |
| 841.3264        |                  |                  |                  |                  | 0.402            | -0.057           |
| .3306           | -0.282           | 0.620            |                  |                  |                  |                  |
| .3339           |                  |                  | -0.148           | 0.598            |                  |                  |
| .3430           | -0.286           | 0.625            |                  |                  |                  |                  |
| .3464           |                  |                  | -0.155           | 0.595            |                  |                  |
| .3548           | -0.292           | 0.630            |                  |                  |                  |                  |
| .3577           |                  |                  | -0.148           | 0.601            |                  |                  |
| .3618           |                  |                  |                  |                  | 0.425            | -0.050           |
| 2445...         |                  |                  |                  |                  |                  |                  |
| 318.1791        |                  |                  |                  |                  | 0.444            | -0.020           |
| .1875           | -0.284           | 0.645            |                  |                  |                  |                  |
| .2074           | -0.280           | 0.662            |                  |                  |                  |                  |
| .2147           |                  |                  | -0.138           | 0.642            |                  |                  |
| .2269           | -0.273           | 0.666            |                  |                  |                  |                  |
| .2321           |                  |                  | -0.132           | 0.658            |                  |                  |
| .2378           |                  |                  |                  |                  | 0.421            | -0.049           |

Note.- Variable stars are Na2, Na3, the comparison star is Na5, check star is No7. (See Hoag et al. 1961)

Table III  
Photometry of NGC 1664

| JD <sub>o</sub> | $\Delta V_{3-4}$ | $\Delta B_{3-4}$ | JD <sub>o</sub> | $\Delta V_{1-4}$ | $\Delta B_{1-4}$ |
|-----------------|------------------|------------------|-----------------|------------------|------------------|
| 2444...         |                  |                  | 2444...         |                  |                  |
| 276.2603        | -0.004           | 1.557            | 276.2493        | -1.314           | -1.446           |
| .2930           | -0.000           | 1.562            | .3118           | -1.345           | -1.484           |
| .3076           | -0.008           | 1.546            |                 |                  |                  |
| 277.2119        | 0.008            | 1.562            | 277.1987        | -1.346           | -1.508           |
| .2271           | 0.001            | 1.536            | .2522           | -1.387           | -1.559           |
| .2452           | -0.022           | 1.511            |                 |                  |                  |
| 290.3580        | -0.020           | 1.502            | 290.3489        | -1.372           | -1.532           |
| .3760           | 0.000            | 1.508            | .3940           | -1.355           | -1.518           |
| .3900           | -0.000           | 1.510            |                 |                  |                  |
| 304.2215        | 0.005            | 1.533            | 304.2133        | -1.347           | -1.544           |
| .2333           | 0.009            | 1.563            |                 |                  |                  |
| .2452           | 0.035            | 1.528            |                 |                  |                  |
| 313.2894        | -0.050           | 1.456            | 313.2823        | -1.364           | -1.518           |
| .2997           | -0.058           | 1.451            | .3130           | -1.379           | -1.546           |
| .3088           | -0.035           | 1.439            |                 |                  |                  |
| 678.3421        | -0.001           | 1.495            | 678.3331        | -1.359           | -1.514           |
| .3609           | 0.024            | 1.499            | .3775           | -1.358           | -1.516           |
| .3741           | -0.003           | 1.457            |                 |                  |                  |
| 841.3943        | -0.053           | 1.411            | 841.3867        | -1.363           | -1.520           |
| .4083           | -0.069           | 1.407            | .4248           | -1.365           | -1.507           |
| .4201           | -0.062           | 1.422            |                 |                  |                  |
| 2445...         |                  |                  | 2445...         |                  |                  |
| 403.3630        | 0.018            | 1.410            | 403.3500        | -1.341           | -1.513           |
| .3825           | 0.006            | 1.491            | .3879           | -1.363           | -1.535           |
| 426.2809        | -0.024           | 1.433            | 426.2776        | -1.332           | -1.510           |
| .2853           | 0.012            | 1.474            | .2910           | -1.316           | -1.606           |
| .2898           | -0.045           | 1.428            |                 |                  |                  |

Note.- Star No.3 is the variable star, No.4 - comparison star, No.1 - check star ( See Hoag et al., 1961).

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