

A NEW SUSPECTED VARIABLE IN PISCES

We report here of the finding of few brightenings of a star in the neighbourhood of the irregular variable RZ Piscium. We became aware of this behaviour during brightness estimates of RZ Psc on sky patrol plates of the plate stacks of the Harvard College Observatory (Cambridge, MA, U.S.A.).

The presumed new variable was visible on only few plates. Normally the magnitude of the object in question was below the limiting magnitude of the sky patrol plates.

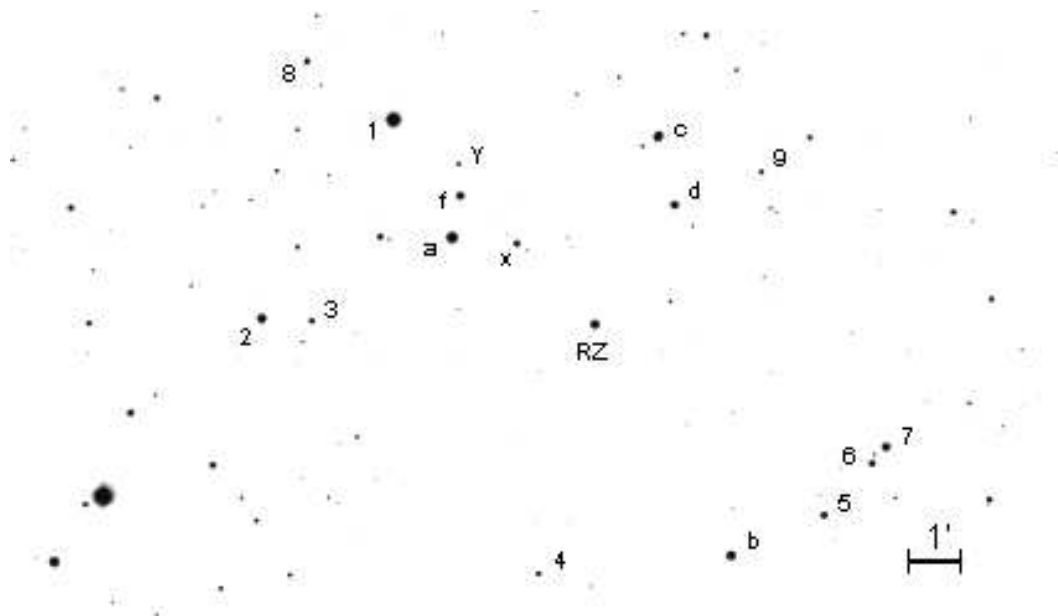


Figure 1. Identification map for the presumed variable (Y) in the neighbourhood of RZ Psc (RZ). Comparison stars are marked, too. Their *B*-magnitudes are listed in Table 1. The map covers an area of $26' \times 17'$ North is on the top and east to the left. The map is based on a *B* plate obtained by R. Ziener, KSO, Tautenburg

Plate flaws can be practically excluded as an explanation for the sporadically appearing object since we found at the exact position of it a faint star on a CCD image taken with the 90-cm telescope of the Großschwabhausen (GSH) observing station of the Jena University Observatory. Independently, we identified the star on prints of the Palomar Observatory Sky Survey as well as on Schmidt plates in the plate archive of the Karl-Schwarzschild-Observatory (KSO), Tautenburg.

Table 1. B -magnitudes of the comparison stars

Comparison star	B (mag)	Comparison star	B (mag)
a	11.42	3	14.49
b	12.28	4	14.84
c	12.44	5	13.86
d	12.95	6	14.00
f	13.15	7	12.76
x	14.08	8	14.34
1	10.12	9	15.38
2	12.25		

Table 2. Brightnesses of star Y

Julian Date	Brightness (mag)	Remarks
2427683.797	14.86	Harvard Obs., B
2427692.805	14.86	Harvard Obs., B
2427736.702	12.44	Harvard Obs., B
2433237.500	≈ 14.5	Harvard Obs., B
2443417.368	≈ 15.7	KSO, Tautenburg B
2443417.380	≈ 15.3	KSO, Tautenburg V
2443417.392	≈ 14.9	KSO, Tautenburg R
2443840.292	≈ 16.1	KSO, Tautenburg B
2450347.421	16.17	GSH, CCD, B

The identification map (Figure 1) covers only a part of that map for RZ Psc published by Friedemann et al. (1995). In the map presented here the object in question, RZ Psc, and the comparison stars are marked. Their B magnitudes have been derived on the blue CCD images obtained by us using photometric standard stars measured by Pugach and Kovalchuk (1983) and Wenzel (1993). The relevant photometric data are compiled in Table 1. The mean r.m.s. error amounts to ± 0.06 mag.

The data of the few discovered brightenings are collected in Table 2. The estimated photometric uncertainties amount to $\Delta m \approx \pm 0.2$ mag.

Additional information have been obtained by measuring the brightness of the star on B , V and R plates of the KSO. For this aim we used for the comparison stars B and R magnitudes from the USNO-SA1.0 catalogue by Monet et al. (1996) and V from the Guide Star Catalog 1.1 (1992). From the three KSO plates obtained at JD 2443417 we derived B , V and R magnitudes amounting to 15.7, 15.3, and 14.9, respectively. Combination of the B , V and R data results in a colour index ($B - V$) ≈ 0.4 mag and ($V - R$) ≈ 0.4 mag. These values correspond to an unreddened star of spectral type F2 to F8.

Taking the brightenings found (see Table 2) as representative, the amplitude of the light variation amounts to $\Delta m_B \approx 3.7 \pm 0.4$ mag. The amplitude derived from the few existing photometric data and the distribution of the brightenings over the time are compatible with the assumption that the variable probably belongs to the class of U Geminorum stars.

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References:

- Friedemann C., Gürtler J. Reimann H.-G., 1995, *A&A*, **300**, 269
 Guide Star Catalog 1.1, 1992, Association of Universities for Research in Astronomy, Inc.
 Monet, D., Bird, A., Canzian, B., Harris, H., Reid, N., Rhodes, A., Sell, S., Ables, H.,
 Dahn, C., Guetter, H., Henden, A., Leggett, S., Levison, H., Luginbuhl, C., Martini,
 J., Monet, A., Pier, J., Riepe, B., Stone, R., Vrba, F., Walker, R., 1996, USNO-
 SA1.0, (edited by U.S. Naval Observatory, Washington DC)
 Pugach, A.F., Kovalchuk, G.U., 1983, *Perem. Zvezdy*, **22**, 9
 Wenzel W., 1993, Private communication