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КРАТКИЕ СООБЩЕНИЯ

A NOTE ON THE CIRCUMSTELLAR DUST AROUND
V 1057 CYG

A valuable set of observations giving light curves in $\bar{U}BVR$ for the four V 1057 Cyg from 1971 to 1982 has been published by Kopatskaya [1]. However, one of the conclusions presented by her is evidently not tenable in the light of existing observations.

Kopatskaya claims that the circumstellar dust envelope now clearly present only developed at the time of the outburst, since the $B-V$ colour (truly interstellar reddening subtracted) of the star before the outburst corresponds well with the alleged spectral type dK0. This is an example of the dangers in perpetuating assumptions as genuine facts. Indeed, Herbig [2], from whom the "classification" is taken, explicitly states: "...dK0... (But this is only a conjecture because the 1957 plate of V 1057 Cyg is not classifiable.)" It may be noted that V 1331 Cyg, the spectrum of which is rather similar to that of pre-outburst V 1057 Cyg, presumably has a photospheric temperature corresponding to an (unobserved) A or F type spectrum (e. g., Chavarria-K. [3]).

The pre-outburst colours of V 1057 Cyg were approximately $B-V = 1.4$, $V-R = 1.6$, $V-I = 3.4$ [1, 4]. Subtraction of the estimated truly interstellar reddening according to the Cygnus law [5] gives approximately $(B-V)_c = 0.7$, $(V-R)_c = 1.0$, $(V-I)_c = 2.2$. Whereas $(B-V)_c$ is generally compatible with an unreddened dK0 star, the other two are definitely not — Johnson [6] gives for the K2V star ϵ Eri the colours $B-V = 0.89$, $V-R = 0.40$, $V-I = 0.70$, and for β Oph (K2III) $B-V = 1.16$, $V-R = 0.53$, $V-I = 0.92$. Unless Haro's [4] magnitudes are terribly wrong, the only way to make these colours fit is to assume that the preoutburst star was of relatively early spectral type, and situated behind a circumstellar dust shell of reddening properties similar to those in the Orion Sword region [5], i. e., with $R = A_V/E_{B-V}$ about 5–6.

Presumably also the now existing shell has properties of this kind. Comparing $B-V$, $V-R$, $V-I$ as measured by Mendoza [7] in 1971 with the spectral type at that time (A8) yields likely colour excesses due to the circumstellar shell of approximately $E_{B-V(CS)} = 0.3$, $E_{V-R(CS)} = 0.6$, $E_{V-I(CS)} = 1.1$. If these are also subtracted from the pre-outburst colours we get something like $(B-V)_* = 0.4$, $(V-R)_* = 0.4$, $(V-I)_* = 1.1$. Such colours can, even if the last one is in error by several tenths of a magnitude, only be fitted to a star rather earlier than A0 and subject to rather heavy obscuration by dust with an R value considerably higher than 3.

The dispersal of such an additional dust envelope could presumably have been responsible for at least a substantial part of the outburst, as suggested, e. g., by me [8].

Замечание об околосредней пыли вокруг V 1057 Cyg. Приводятся наблюдательные данные, показывающие, что вывод об образовании вокруг V 1057 Cyg пылевой оболочки в результате вспышки недостаточно обоснован.

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