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REVEALING OF A NEW SU UMa TYPE VARIABLE STAR VAR21 CORONAE BOREALIS

Var21 Coronae Borealis was discovered and designated by Antipin (1996). He classified this star as a dwarf nova (U Geminorum type) with a photographic range of 14.5 - <17.5 magnitudes. Several outbursts were observed. Two types of them were found, differing by duration. The longer outbursts with a duration of 15 days or more and the shorter ones lasting about 10 days. This behavior is very common to the SU Ursae Majoris subtype of cataclysmic variables. These variable stars are characterized by the presence of small-amplitude (semi)periodic modulations in the light curve, called *superhumps*. Even though CCD photometry was made by M. Iida (Nagamo, Japan) in 1996 and T. Vanmunster (Landen, Belgium), no superhumps were detected.

During the last superoutburst in May 1997, the CCD photometry at Nicholas Copernicus Observatory and Planetarium in Brno (Czech Republic) was performed on night May 11/12. We used SBIG's CCD camera ST-7 placed in primary focus of 40cm Newtonian telescope (f=1750mm). For automatic reduction aperture photometry package MuniPhot (by Filip Hroch, Masaryk University Brno, using some author's routines), which is based on the well known DaoPhot II - New generation (Stetson, 1987) was used.

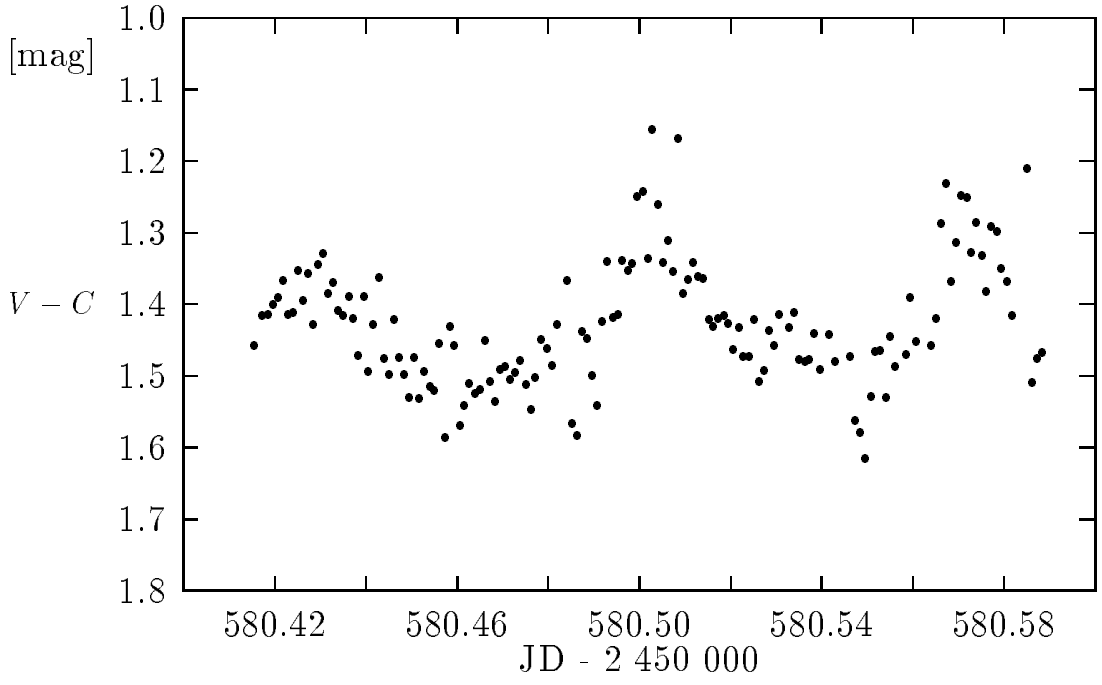

Figure 1. Light curve with three superhump maxima. V–C is difference between variable and comparison star

The observing run started on JD 2450580.42 and ended on JD 2450580.59. Total number of exposures was 147 (two of them were omitted from the list beacuse of clouds). The star was near to 14.6 mag in R-band (Kron-Cousins) filter. Each exposure lasted 90 seconds. All images were processed by standard dark-frame and flat-field corrections. The standard deviation of magnitude of variable star was σ = 0.05 mag. The star GSC 2576.2027 close to Var21 CrB position was used as a comparison.

In the light curve (Figure 1), three superhump maxima were definitely detected. Using Phase Dispersion Minimization (Stellingwerf 1978) analyzing routines written by Taichi Kato (Kyoto University, Japan) we obtain value of superhump period as P_{SH}=(0.0743 $\pm$ 0.0006) day. This result is well within the range of superhump periods of usual SU UMa stars, which lies below the lower limit of the *period-gap* (Osaki 1996) of cataclysmic variables, which is aproximately from 2 hours to 3 hours.

Independent CCD photometry performed during the same night by Vanmunster (1997) has confirmed our results. So there are good reasons to classify variable star Var21 CrB as an UGSU (U Geminorum, SU UMa subclass) dwarf nova with a range of variability (14.5 - <17.5) mag (P) and coordinates: $\alpha_{2000} = 16^{\rm h}\ 00^{\rm m}03\overset{\rm s}{.}7$ and $\delta_{2000} = 33°11'15''$.

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Rudolf NOVÁK
N. Copernicus Observatory
and Planetarium
Kraví hora 2
Brno 616 00, Czech Republic
Internet: rudolfn@physics.muni.cz

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