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NEW FIELD VARIABLE STARS I

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In the course of photometric and astrometric observations of selected minor planets, we obtained 4415 individual CCD frames at the Konkoly Observatory between April 1998 and January 2000 (Sárneczky et al. 1999, Kiss et al. 1999, Szabó et al. 2000). In order to extract as much information as possible, we have surveyed this large amount of data to identify known or new variable stars captured on those frames which were obtained as time-series CCD photometry of certain asteroids. As the typical observations covered 4-6 hours per night, we could only find short-period variable stars.

The observations were carried out with the 60/90/180-cm Schmidt telescope at the Piszkéstető Mountain Station of the Konkoly Observatory. The detector was a Photometrics AT200 CCD camera (1536 × 1024 pixels, KAF-1600 chip with UV-coating). The field of view was $29' \times 18'$. The observations were mostly unfiltered, but in several cases we used the Cousins R_C filter.

The photometric reductions were done with the *ROMAFOT* package of ESO-MIDAS version 98NOVpl2.1. We have examined time-series observations that covered at least 90 minutes. For constructing light curves we used a multi-object multi-frame analysing software developed by Balog et al. (2000). This software, called APPLE, determines interactively the sub-pixel size shifts of the frames caused by the guiding errors of the telescope. Differential instrumental magnitudes were determined relative to an average value calculated from many (typically 10-20) stars. The resulting light curves were checked interactively by plotting them on the computer screen. The photometric accuracy is between 0.01–0.05 mag, depending on the target brightness.

We have found seventeen variable stars on the examined CCD frames. The SIMBAD database was used to identify them with previously known variables, but all of them turned out to be new discoveries. Six variables were observed in February, 2000 with an objective prism at the Konkoly Observatory in order to determine approximate spectral types. We present light curves for the other eleven variables in this paper (Figs. 1, 2), while the remaining six stars together with their spectra will be published in a subsequent paper. The presented observational data are available upon request from the first author.

Basic data (identifications, celestial coordinates and magnitudes) of the new variables are summarized in Table 1. The sparse phase coverage did not allow reliable classification

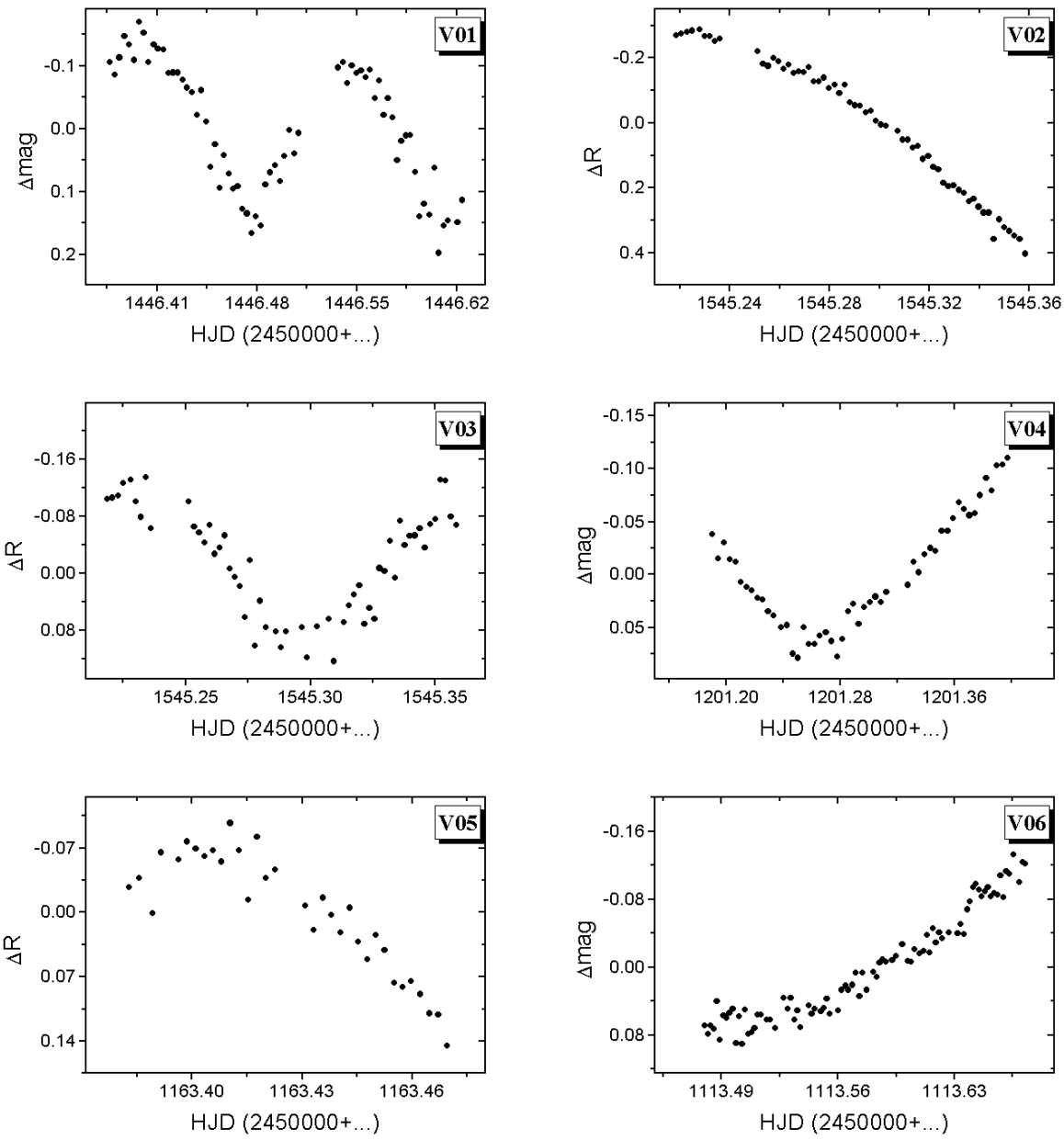

Figure 1. Light curves of 6 new variable stars

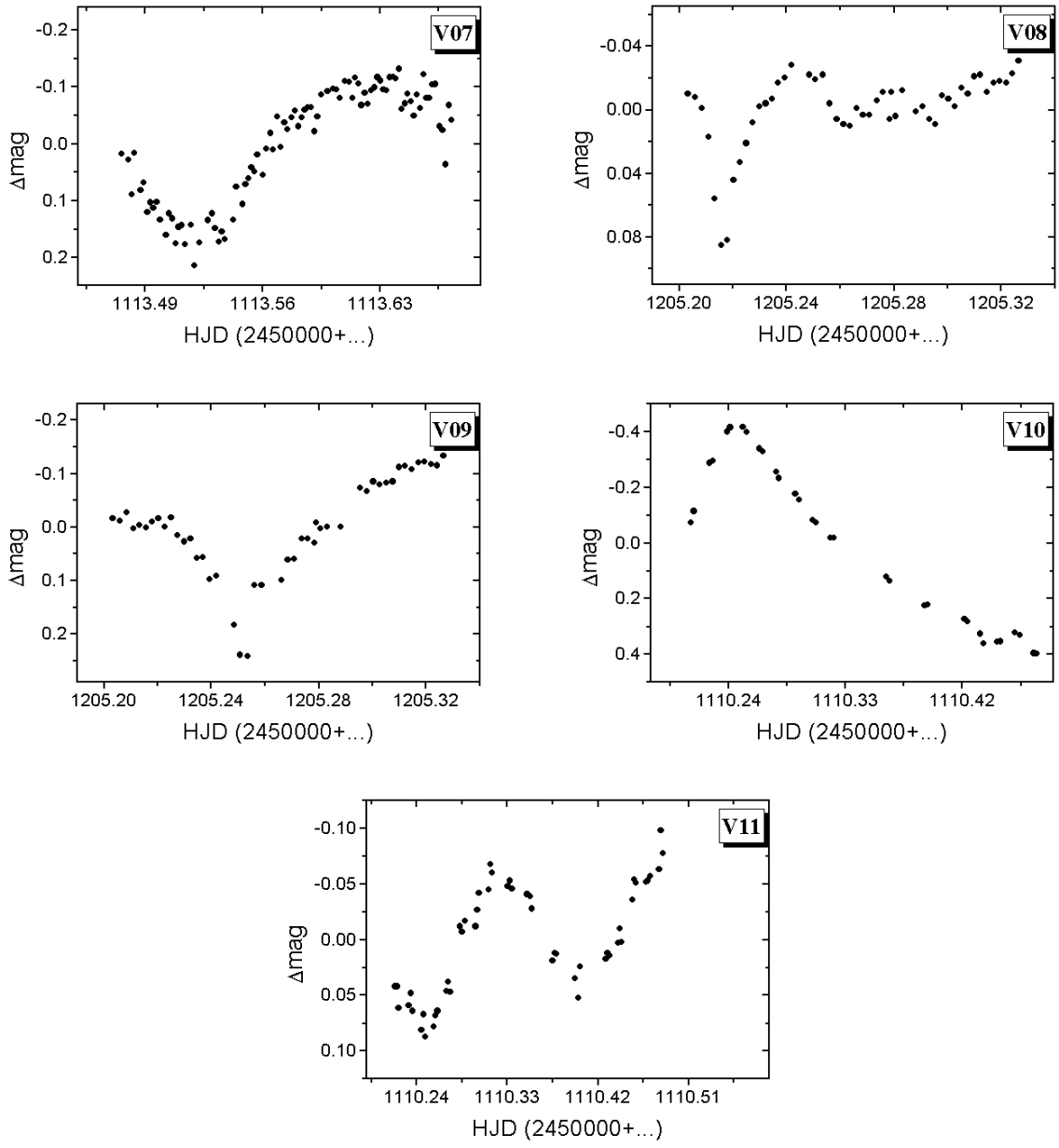

Figure 2. Light curves of 5 new variable stars

Table 1: Basic data of the new variables. The coordinates, red and blue magnitudes have been taken from USNO-A2.0

Variable	R.A. (2000)	Dec. (2000)	Red mag.	Blue mag.	Type
V01	$01^h23^m02^s.75$	$+25°37'12''.90$	16.3	17.0	EW
V02	$04^h29^m31^s.58$	$+39°52'47''.45$	15.7	16.2	–
V03	$04^h30^m35^s.11$	$+39°45'44''.51$	17.0	18.2	EW
V04	$04^h31^m16^s.85$	$+13°06'41''.83$	17.0	18.1	–
V05	$05^h02^m00^s.46$	$+10°37'23''.31$	16.2	17.1	–
V06	$05^h31^m03^s.25$	$+10°28'43''.57$	15.2	17.6	–
V07	$05^h31^m12^s.78$	$+10°27'42''.99$	16.7	17.4	EW
V08	$06^h32^m27^s.44$	$+27°17'04''.79$	14.7	15.2	EA
V09	$06^h32^m49^s.06$	$+27°20'09''.16$	16.0	16.4	–
V10	$23^h29^m24^s.67$	$+10°01'17''.08$	15.6	15.6	RRab
V11	$23^h47^m39^s.84$	$+09°20'29''.93$	15.1	16.1	EW

of the variable stars, therefore, we give only a rough estimate of the type of variability based on the light curve shapes and USNO-A2.0 colours. Further multicolour photometry is needed to clarify the real nature of these new variables.

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