OBSERVATIONS OF SELECTED HIPPARCOS VARIABLES

J.M. GOMEZ-FORRELLAD[1], E. GARCIA-MELENDO[2], J. GUARRO-FLO[1],
J. NOMEN-TORRES[1], J. VIDAL-SAINZ[1]

[1] Grup d'Estudis Astronomics, Apartado 9481, 08080 Barcelona, Spain, e-mail: jmgomez@astro.gea.cesca.es

[2] Esteve Duran Observatory Foundation, El Montanya-Seva, 08553 Seva, Barcelona, Spain,
e-mail: duranobs@astro.gea.cesca.es

New photometric observations of nine HIPPARCOS variables, performed between 1997 and 1998, are presented. Most of these stars were selected on the basis of a new analysis of the satellite data, which suggested that the actual type of variability could be different from the originally listed in the HIPPARCOS and TYCHO catalogues (ESA, 1997). In the 74th Special Name-list (Kazarovets et al., 1999), some of these observed stars were correctly reclassified, but the new data showed that still some of them are improperly classified. In all cases observations allowed to improve the existing satellite light curve and ephemeris. Table 1 lists the observational log for these objects whereas Table 2 summarizes the obtained results.

Table 1

HIP	Observational interval	Comparison	Check star(s)	Remarks
8821	23 Nov 1997–24 Jan 1998	SAO 004489	SAO 004515	1
13221	09 Oct 1997–27 Feb 1998	SAO 4750	HD 17785	2
23809	05 Jan 1998–24 Jan 1998	PPM 175726	PPM 701984	3
51677	27 Dec 1997–18 Mar 1998	SAO 099182	—	4
89972	24 Mar 1998–12 Jul 1998	SAO 103639	GSC 1572_1341	5
90972	02 Aug 1997–03 Oct 1997	GSC 3917_1556	—	6
95547	19 Jun 1998–04 Oct 1998	SAO 124627	—	4
110464	21 Aug 1997–27 Sep 1997	SAO 127488	—	4
115627	30 Sep 1997–09 Oct 1997	SAO 108599	SAO 108577 SAO 108586	7

Remarks to Table 1:

1 Piera Observatory, 14-cm telescope
2 Mollet del Valles Observatory, 8-cm telescope
3 Monegrillo Observatory, 41-cm telesope
4 Mollet del Valles Observatory, 41-cm telescope

5 Esteve Duran Observatory, 60-cm telescope
6 L'Estelot Observatory, 18-cm telescope
7 Esteve Duran Observatory, 6-cm telescope

V776 Cas. Catalogued as an EW: in the 74th Special Name-List. This object was also included in a list of low amplitude EW system candidates by Duerbeck (1997). New photometric observations confirm the binary nature of this star: an EW undergoing marginal

Table 2

HIP	GCVS-Name	*V* mag. range*	Spectral type	Variable type
8821	V776 Cas	0.156—0.137	F0	EW or ELL
13221	V793 Cas	0.254—0.252	B8	EA
23809	V1363 Ori	0.214—0.179	F8	EW or ELL
51677	ET Leo	0.136—0.104	G5	EW or ELL
89972	—	0.18 —0.03	A0	EA
90972	HI Dra	0.189—0.170	F8	EB or ELL
95547	V1454 Aql	0.161—0.033	A2	EA
110464	PU Peg	0.103—0.079	F0	EB
115627	V351 Peg	0.32	A9III	EW

* When two magnitude ranges are given, the first one corresponds to minimum I and
the second one to minimum II.

eclipses or an ellipsoidal variable (Figure 1).

$$\text{Min. I} = \text{HJD } 2448500.0850 + 0\overset{d}{.}440413 \times E.$$
$$\pm 0.0001 \quad \pm 0.000001$$

V793 Cas. Classified as an EB eclipsing binary system, the new photometric data
indicate that this object is actually an Algol-type variable (Figure 2) and confirm the
original HIPPARCOS ephemeris. The following primary minimum timing was derived:

$$\text{Min. I} = \text{HJD } 2450810.4740, \quad \text{epoch} = 1398.0.$$
$$\pm 0.0005$$

V1363 Ori. This star was classified as EW? with a period of 0.431915 days and brightness
variation from $10\overset{m}{.}346$ to $10\overset{m}{.}590$ in the *V* band (ESA, 1997). In the 74th Special Name-
List, the star was catalogued as an EW. New data show that this object is an EW or ELL
variable (Figure 3). A $-0\overset{m}{.}01$ O'Connell effect (Max. I − Max. II, Max. I is the maximum
following the primary minimum), also present in the folded HIPPARCOS light curve, was
detected.

$$\text{Min. I} = \text{HJD } 2448500.0288 + 0\overset{d}{.}431921 \times E.$$
$$\pm 0.0001 \quad \pm 0.000001$$

ET Leo. Initially listed as an unknown variability type, with a period of 0.1732510
days and a brightness variation from $9\overset{m}{.}5494$ to $9\overset{m}{.}721$ in the *V* band (ESA, 1997). In the
74th Special Name-List, the star was catalogued as an EW:. The object was also included
in a list of EW binary stars candidates of low amplitude by Duerbeck (1997). Observations
show that it is a W UMa star undergoing marginal eclipses or an ELL (Figure 4).

$$\text{Min. I} = \text{HJD } 2448499.9714 + 0\overset{d}{.}346503 \times E.$$
$$\pm 0.0010 \quad \pm 0.000002$$

HIP 89972. This object was catalogued as an unsolved variable with a brightness
variation from $10\overset{m}{.}260$ to $10\overset{m}{.}490$ (ESA, 1997). Photometric observations showed that
it is an Algol-type object (Figure 5). The position of the secondary minimum at phase
0.488, also suggests that the orbit might not be circular.

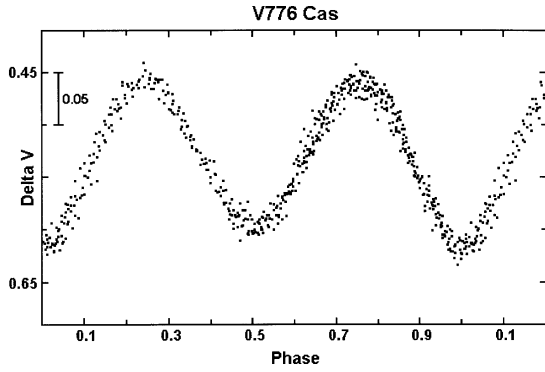$$\text{Min. I} = \text{HJD } 2451002.5657 + 0\overset{d}{.}920505 \times E.$$
$$\pm 0.0004 \quad \pm 0.000004$$

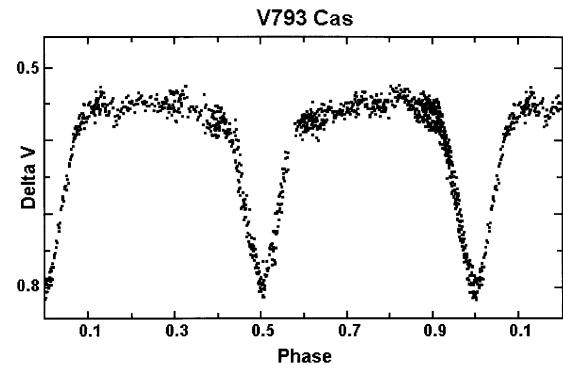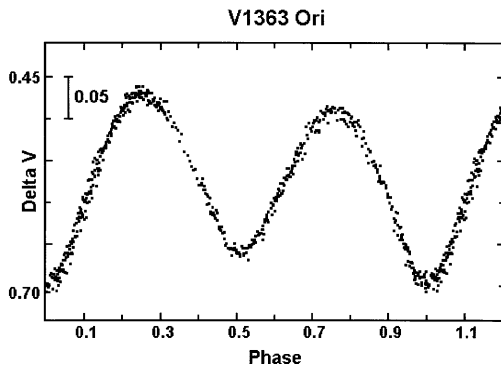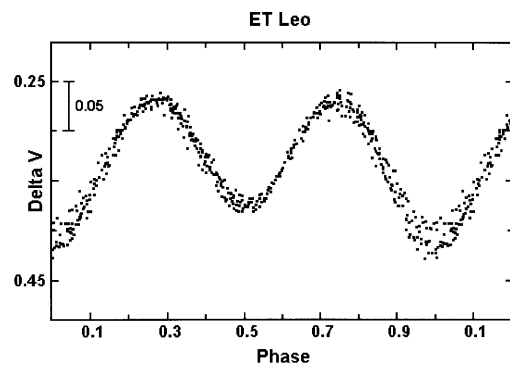**Figure 1.**

Figure 2.

Figure 3.

Figure 4.

HI Dra. Star listed in the HIPPARCOS catalogue and later classified in the 74th Special Name-List as an RRc variable. An analysis of the satellite data indicated that this object was probably an ellipsoidal or Beta Lyrae variable. New photometric observations confirmed that light variations are due to binarity (Figure 6). In addition, the folded light curve shows an O'Connell effect of 0^m02, also present in the folded HIPPARCOS light curve.

$$\text{Min. I} = \text{HJD } 2448500.3186 + 0^d597417 \times E.$$
$$\pm 0.0010 \quad \pm 0.000003$$

V1454 Aql. In the 74th Special Name-list of Variable Stars this object is listed as E:. An analysis of the photometric satellite data allowed to determine that it is an Algol-type eclipsing binary star. New photometric observations confirmed this point (Figure 7).

$$\text{Min. I} = \text{HJD } 2451010.49765 + 1^d049648 \times E.$$
$$\pm 0.00032 \quad \pm 0.000002$$

PU Peg. Light curve is depicted in Figure 8.

$$\text{Min. I} = \text{HJD } 2448500.05048 + 0^d862014 \times E.$$
$$\pm 0.00010 \quad \pm 0.000064$$

V351 Peg. Star catalogued as an RRc variable in the HIPPARCOS catalogue, and in the 74th Special Name-list. An analysis of the satellite data and new photometric observations showed that this star is not an RRc Lyrae star but an EW eclipsing binary system (Figure 9). Minimum I and II cannot be unambiguously distinguished from the observations. In the given ephemeris the best observed minimum was taken as the primary one.

$$\text{Min. I} = \text{HJD } 2448500.493 + 0^d593297 \times E.$$
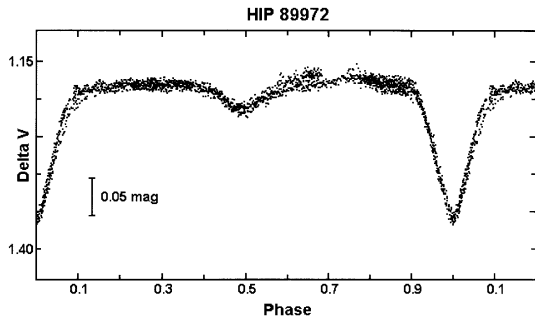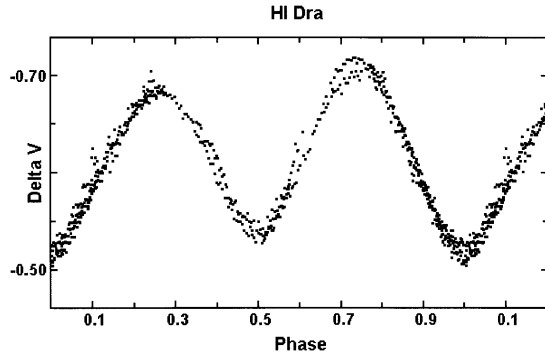$$\pm 0.001 \quad \pm 0.000001$$

HIP 89972

Figure 5.

HI Dra

Figure 6.

V1454 Aql

Figure 7.

PU Peg

Figure 8.

V351 Peg
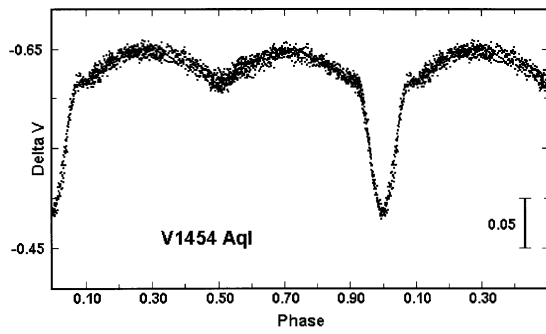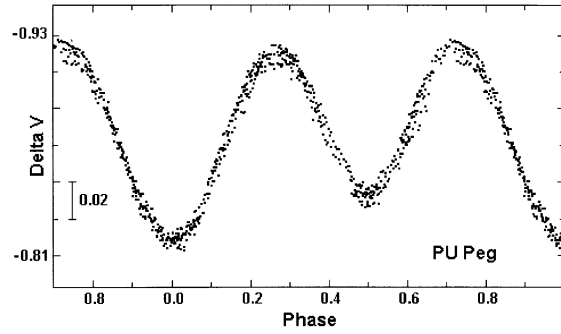
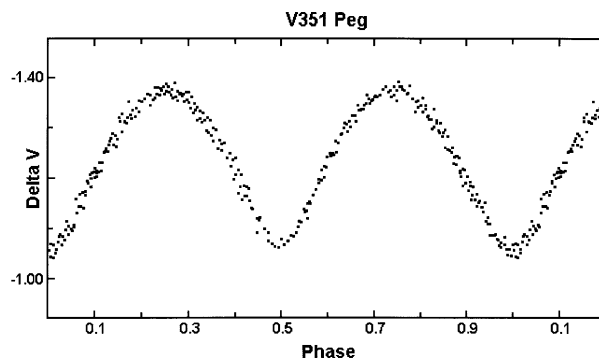Figure 9.

References:

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Kazarovets, A.V., Samus, N.N., Durlevich, O.V., Frolov, S.V., Antipin, S.V., Kireeva, N.N., Pastukhova, E.E., 1999, IBVS No. 4659