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BVI_c CCD Observations of 164 RR Lyrae variables

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We present 4660 magnitude measurements in the B, V, and I_c filters acquired for 164 RR Lyrae stars.

The CCD observations were performed between March 16 and May 31, 2016 (JD 2457464–2457540) with the 1-m reflector of the South African Astronomical Observatory (SAAO), equipped with the Sutherland High-speed Optical Camera (Coppejans et al. 2013). We used BVI_c filters of the Kron–Cousins (Cousins 1976) photometric system.

We first reduced observations obtained using "all-sky" technique exclusively during photometric nights to obtain a catalog of positions and PSF magnitudes of all objects found on the best CCD frames. We then selected, from this catalog, constant stars, which we used for differential photometry of all stars in all CCD frames including those acquired during non-photometric nights. For a complete description of the observation and reduction technique employed, see Berdnikov et al. (2011).

We acquired a total of 4660 measurements for 164 RR Lyraes, which are plotted in Figures 1–12. The phases of the observations were calculated with the light elements from GCVS-V (Samus et al. 2017). Observational uncertainties are close to 0.01 mag in all bands. The observations are available in a text file in the html version of the paper.

We will use our data to study the structure and kinematics of the Galactic halo and thick disk as well as the properties of RR Lyrae stars.

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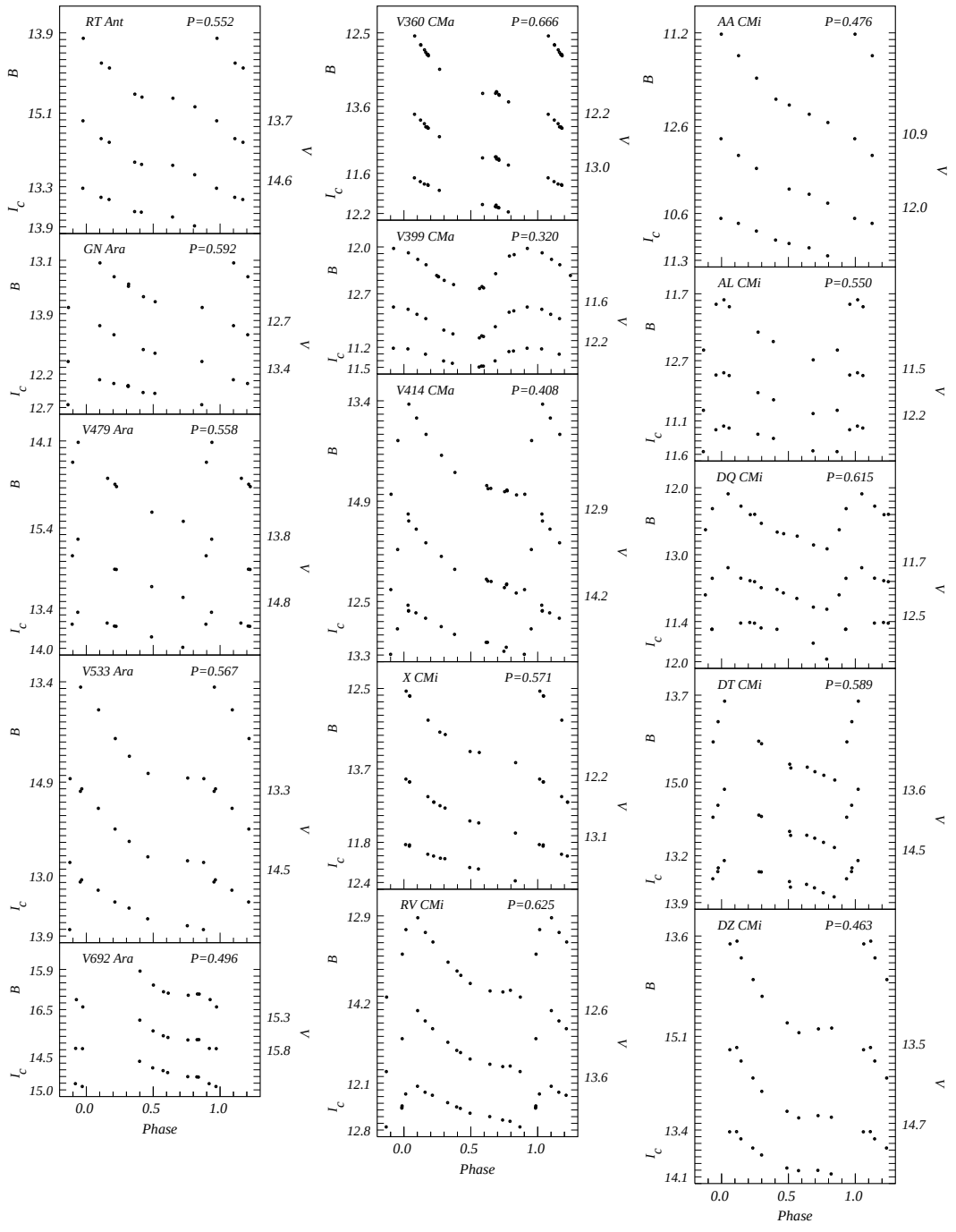

Figure 1.
Phased light curves for RT Ant, GN Ara, V479 Ara, V533 Ara, V692 Ara, V360 CMa, V399 CMa, V414 CMa, X CMi, RV CMi, AA CMi, AL CMi, DQ CMi, DT CMi, and DZ CMi.

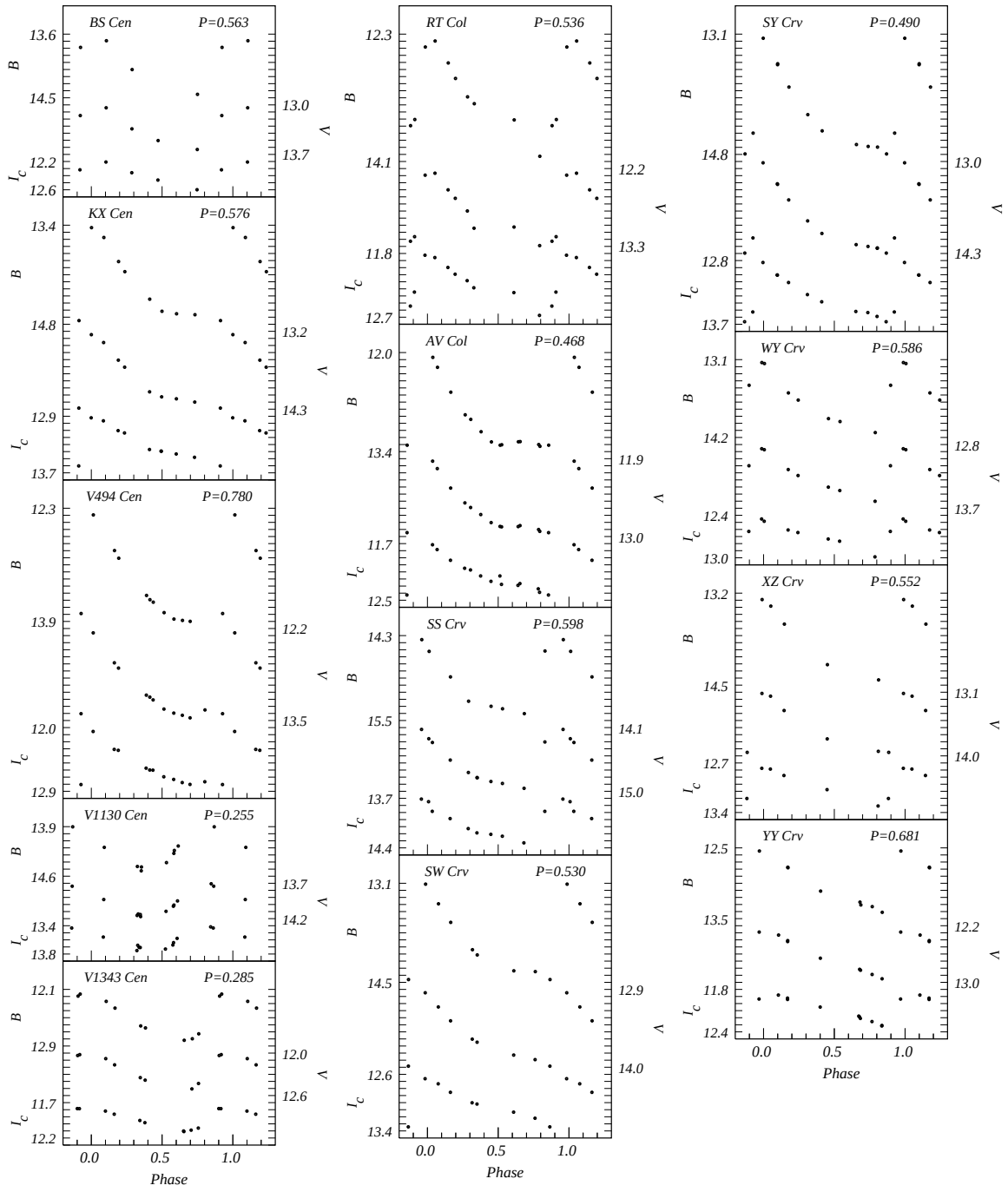

Figure 2.
Phased light curves for BS Cen, KX Cen, V494 Cen, V1130 Cen, V1343 Cen, RT Col, AV Col, SS Crv, SW Crv, SY Crv, WY Crv, XZ Crv, and YY Crv.

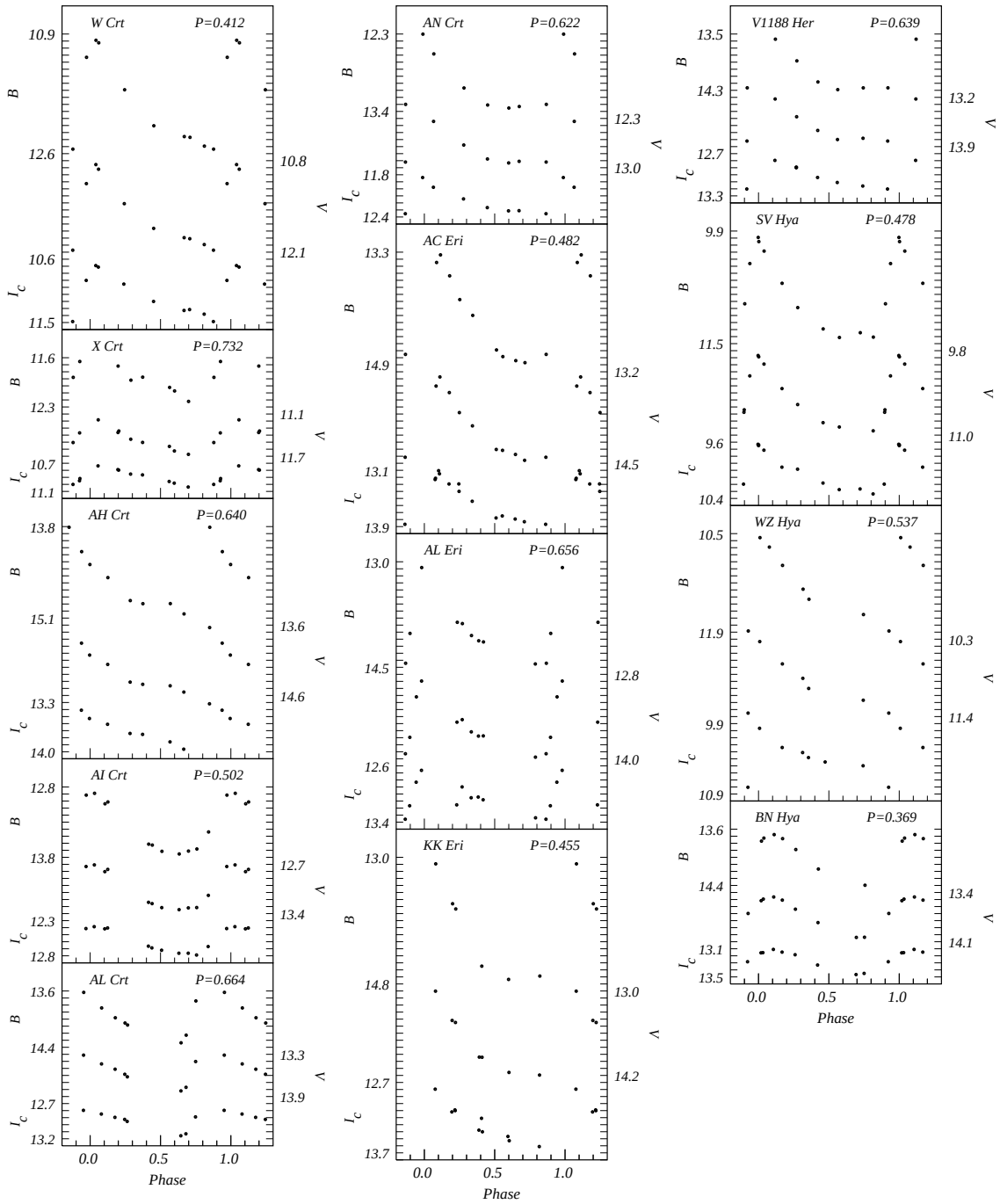

Figure 3.
Phased light curves for W Crt, X Crt, AH Crt, AI Crt, AL Crt, AN Crt, AC Eri, AL Eri, KK Eri, V1188 Her, SV Hya, WZ Hya, and BN Hya.

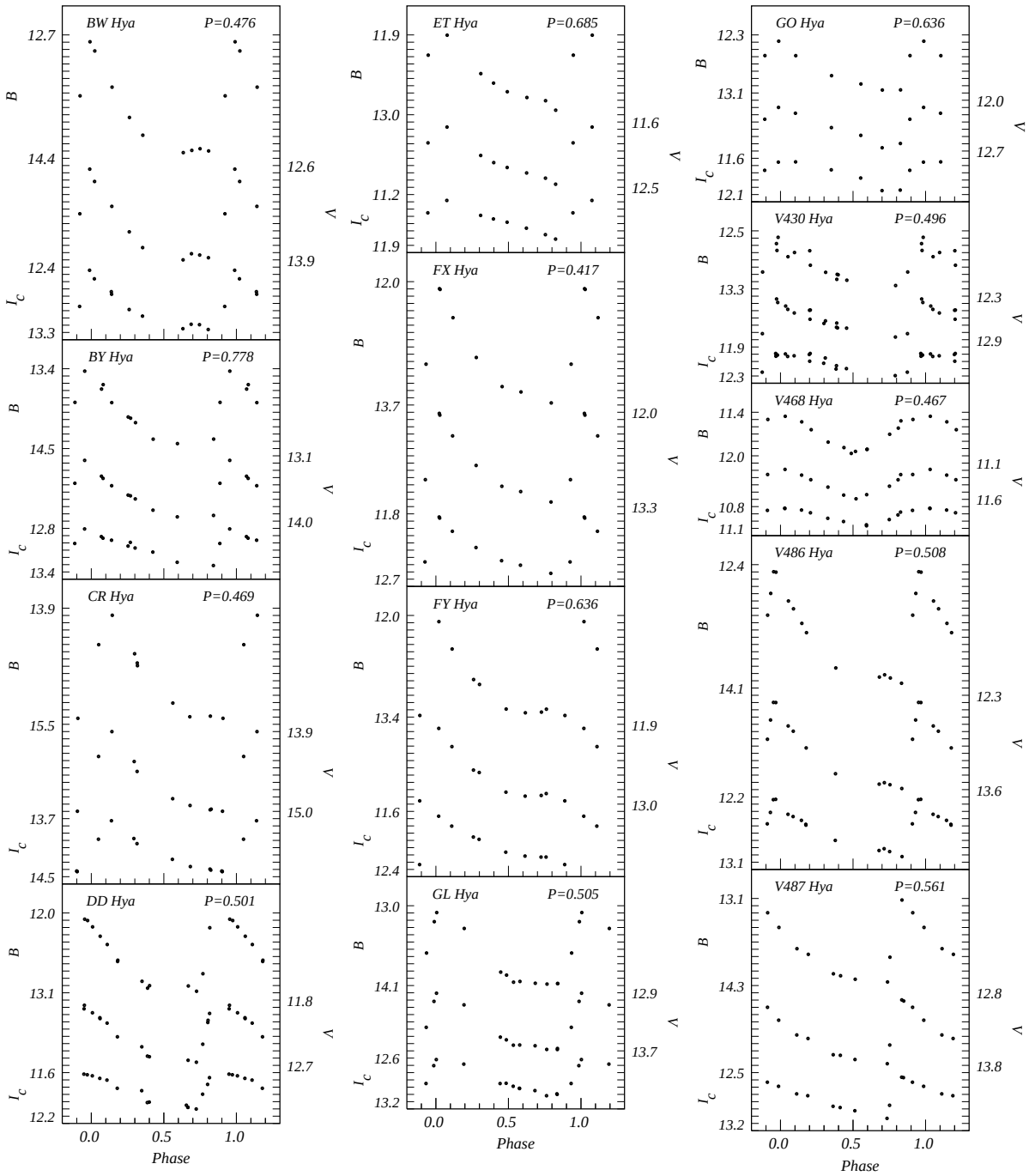

Figure 4.
Phased light curves for BW Hya, BY Hya, CR Hya, DD Hya, ET Hya, FX Hya, FY Hya, GL Hya, GO Hya, V430 Hya, V468 Hya, V486 Hya, and V487 Hya.

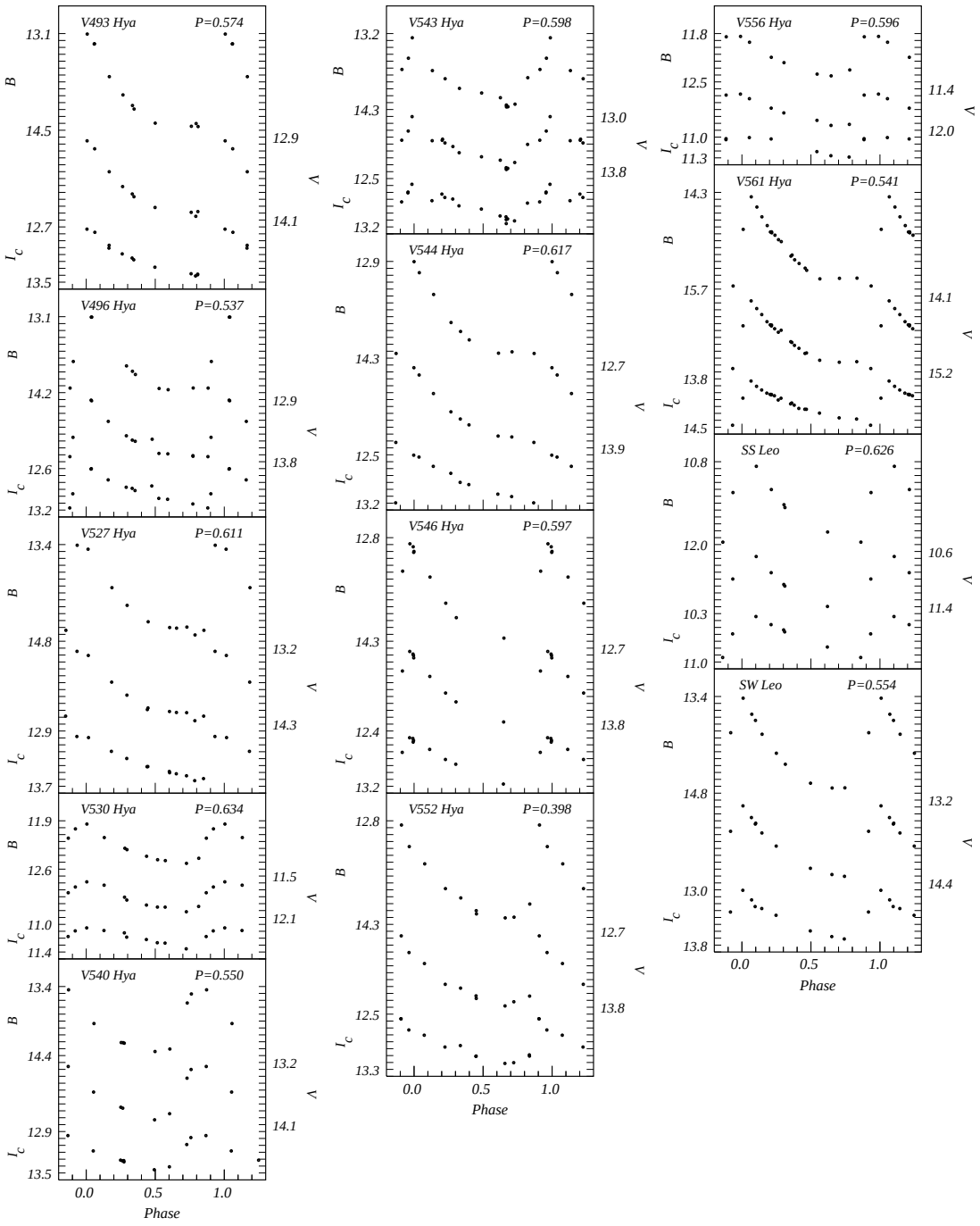

Figure 5.
Phased light curves for V493 Hya, V496 Hya, V527 Hya, V530 Hya, V540 Hya, V543 Hya, V544 Hya, V546 Hya, V552 Hya, V556 Hya, V561 Hya, SS Leo, and SW Leo.

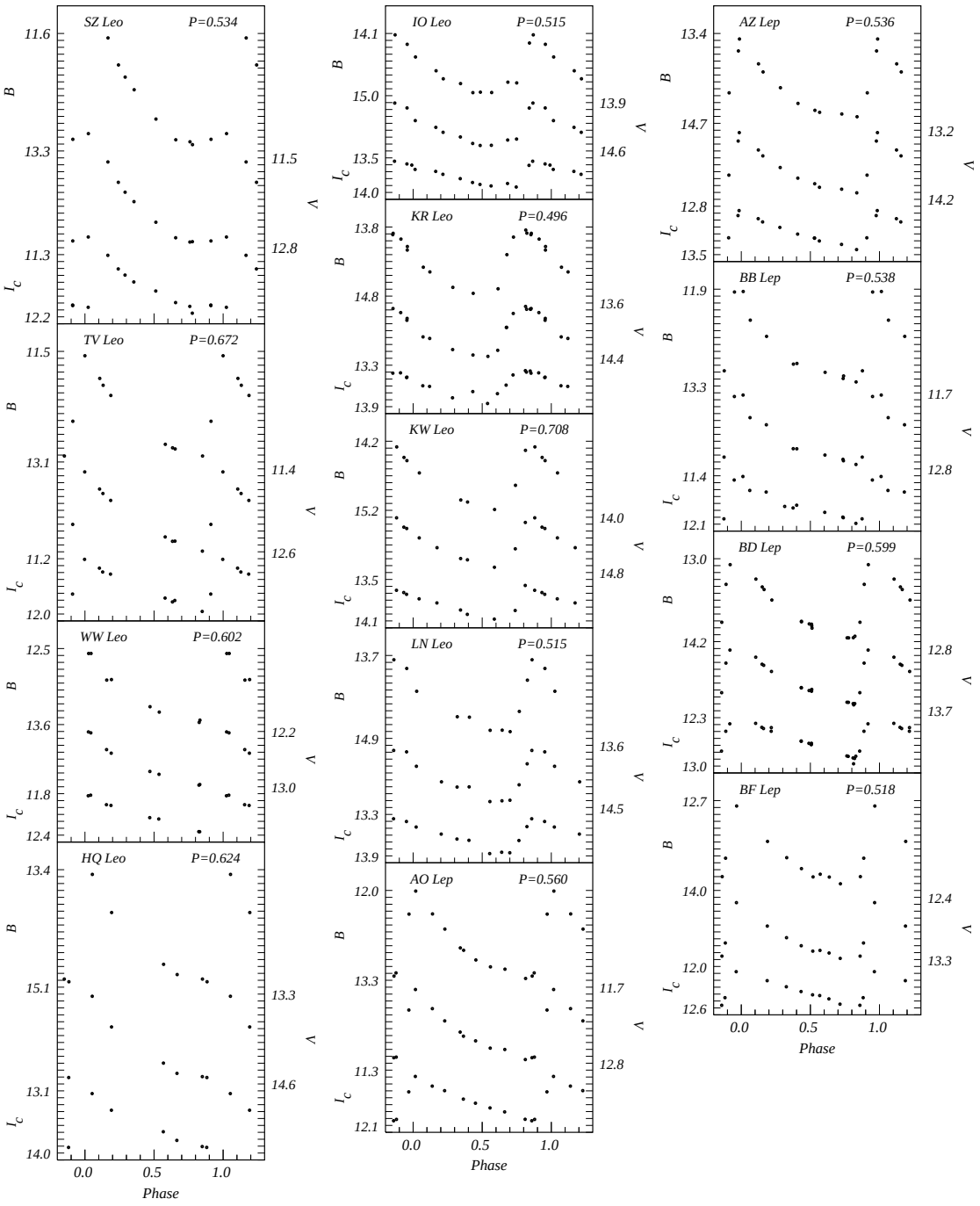

Figure 6.
Phased light curves for SZ Leo, TV Leo, WW Leo, HQ Leo, IO Leo, KR Leo, KW Leo, LN Leo, AO Lep, AZ Lep, BB Lep, BD Lep, and BF Lep.

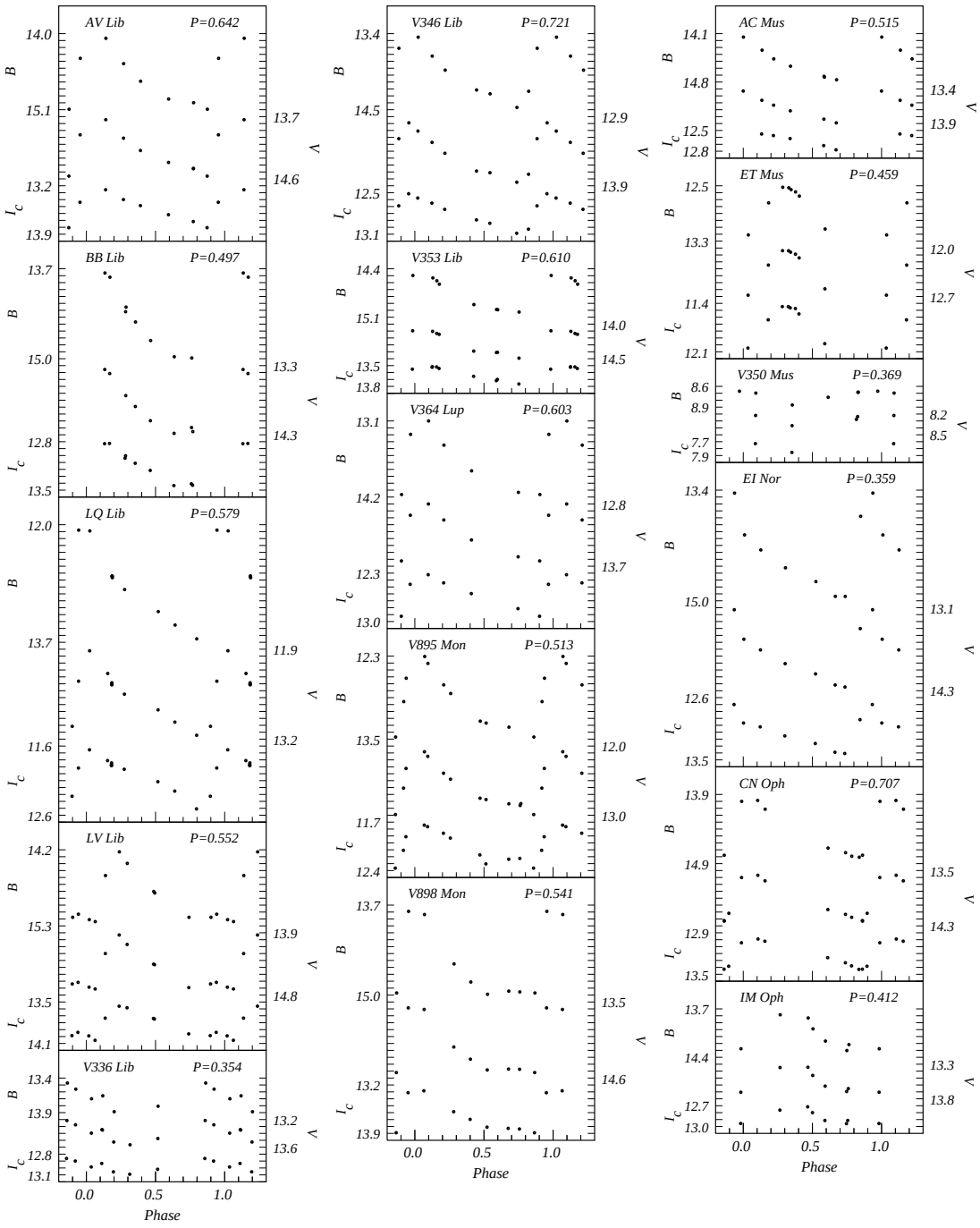

Figure 7.
Phased light curves for AV Lib, BB Lib, LQ Lib, LV Lib, V336 Lib, V346 Lib, V353 Lib, V364 Lup, V895 Mon, V898 Mon, AC Mus, ET Mus, V350 Mus, EI Nor, CN Oph, and IM Oph.

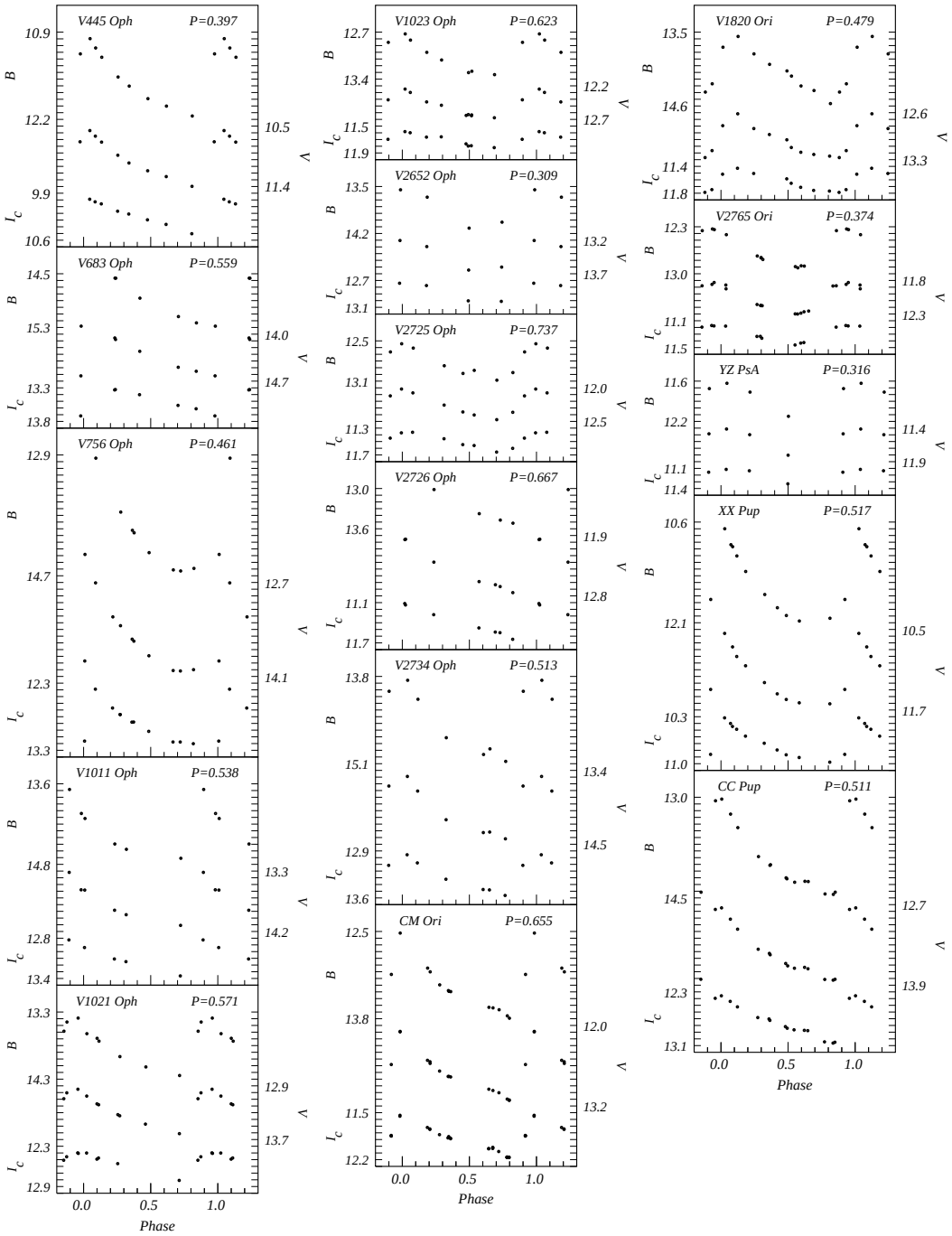

Figure 8.
Phased light curves for V445 Oph, V683 Oph, V756 Oph, V1011 Oph, V1021 Oph, V1023 Oph, V2652 Oph, V2725 Oph, V2726 Oph, V2734 Oph, CM Ori, V1820 Ori, V2765 Ori, YZ PsA, XX Pup, and CC Pup.

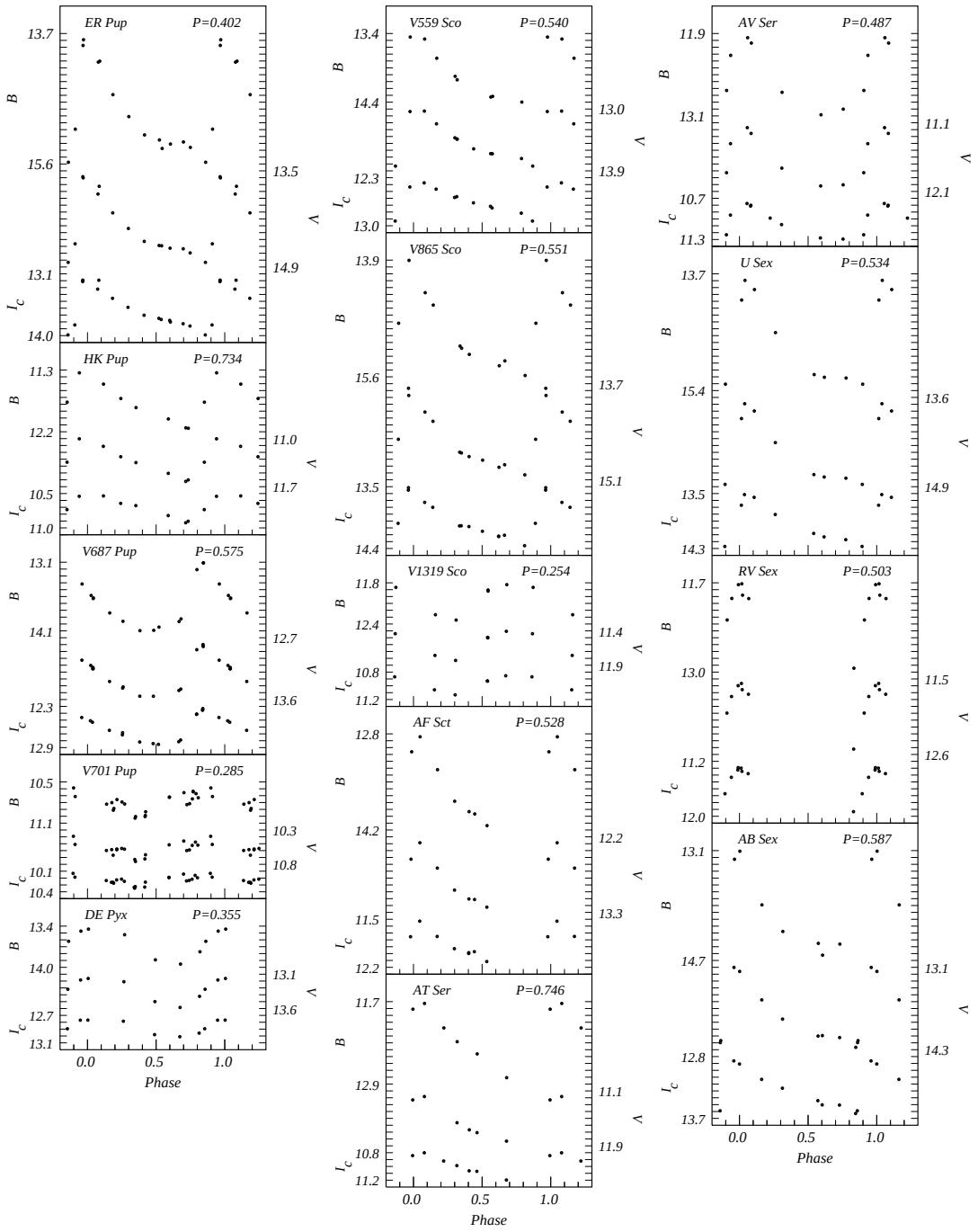

Figure 9.
Phased light curves for ER Pup, HK Pup, V687 Pup, V701 Pup, DE Pyx, V559 Sco, V865 Sco, V1319 Sco, AF Sct, AT Ser, AV Ser, U Sex, RV Sex, and AB Sex.

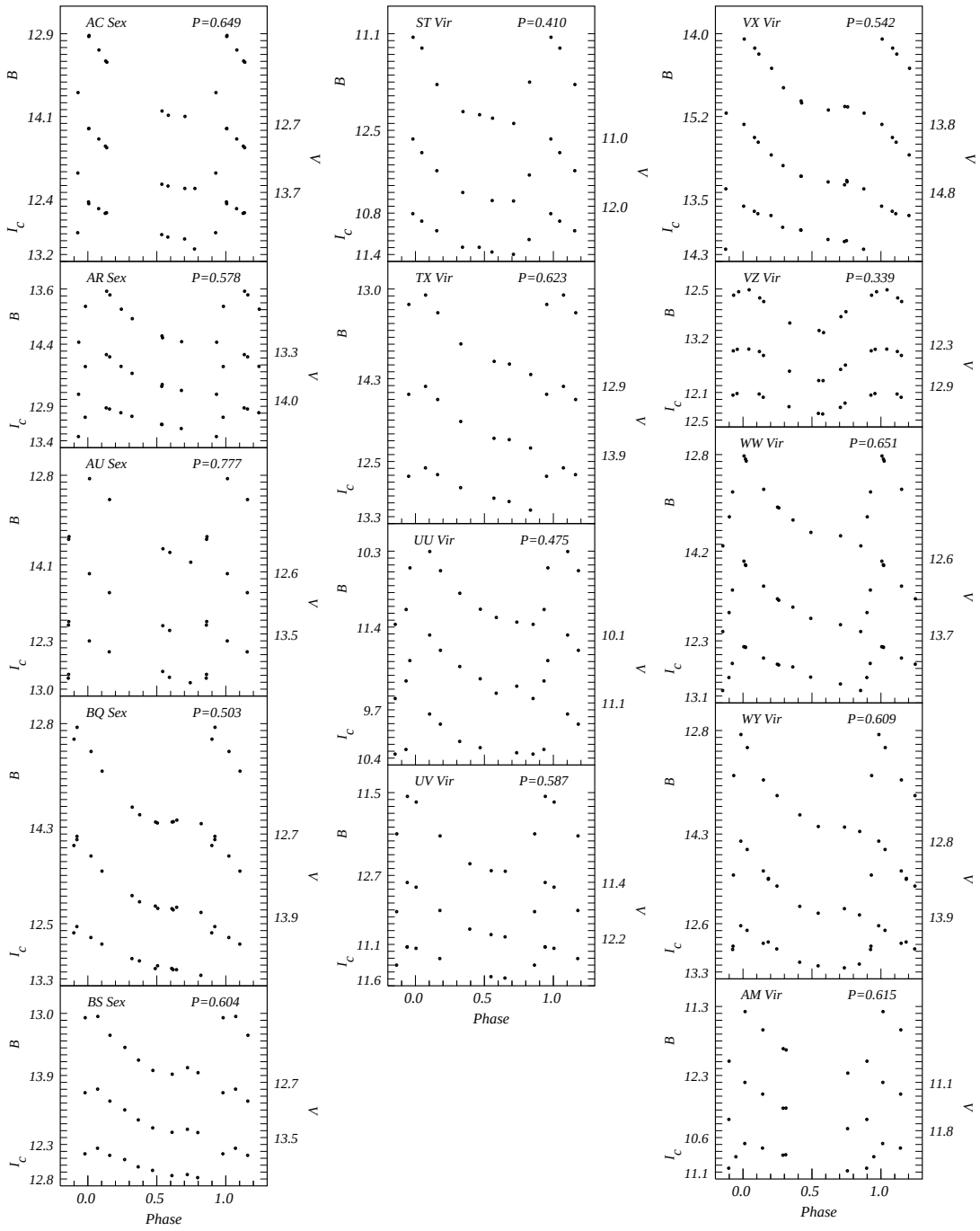

Figure 10.
Phased light curves for AC Sex, AR Sex, AU Sex, BQ Sex, BS Sex, ST Vir, TX Vir, UU Vir, UV Vir, VX Vir, VZ Vir, WW Vir, WY Vir, and AM Vir.

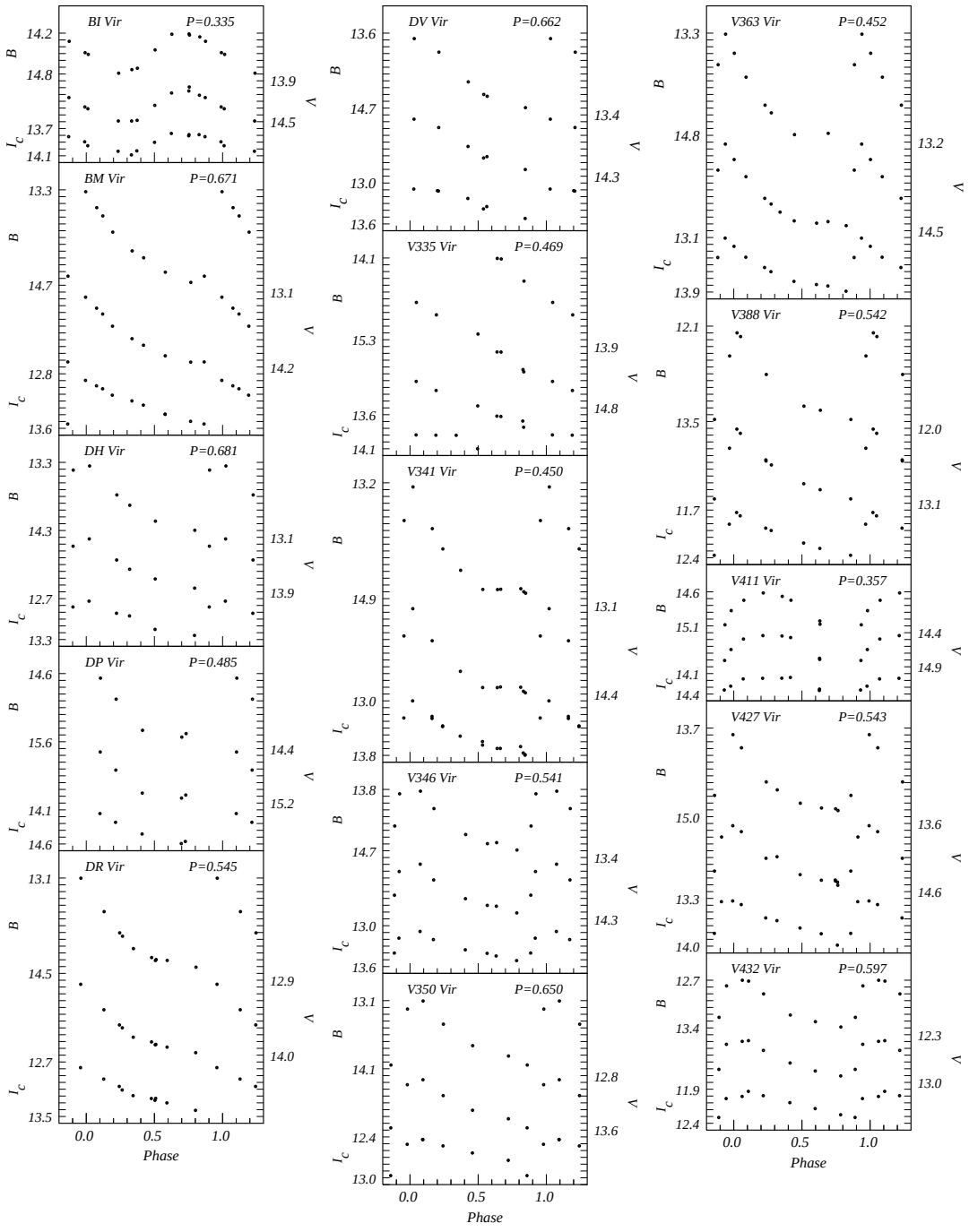

Figure 11.
Phased light curves for BI Vir, BM Vir, DH Vir, DP Vir, DR Vir, DV Vir, V335 Vir, V341 Vir, V346 Vir, V350 Vir, V363 Vir, V388 Vir, V411 Vir, V427 Vir, and V432 Vir.

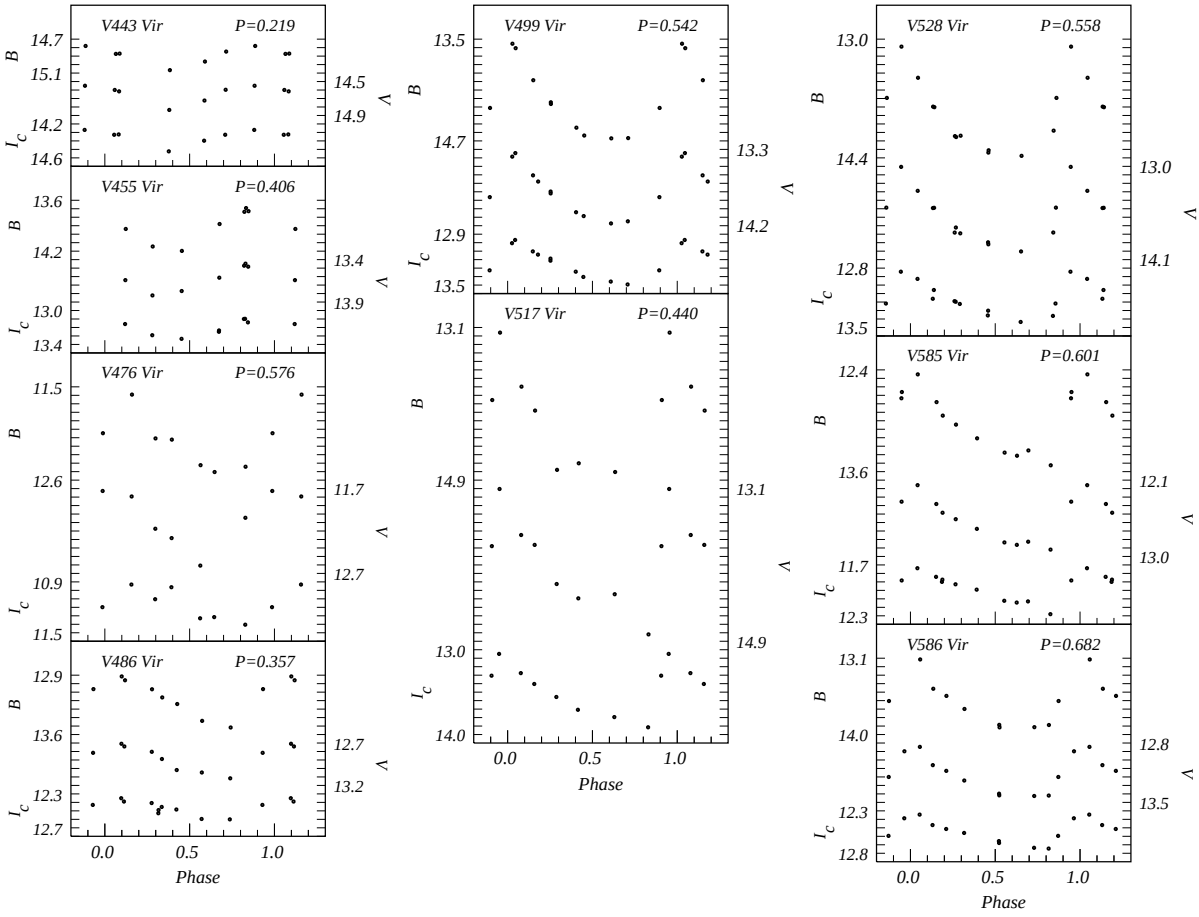

Figure 12.
Phased light curves for V443 Vir, V455 Vir, V476 Vir, V486 Vir, V499 Vir, V517 Vir, V528 Vir, V585 Vir, and V586 Vir.