

LIGHTCURVE ANALYSIS FOR TWO MAIN BELT ASTEROIDS

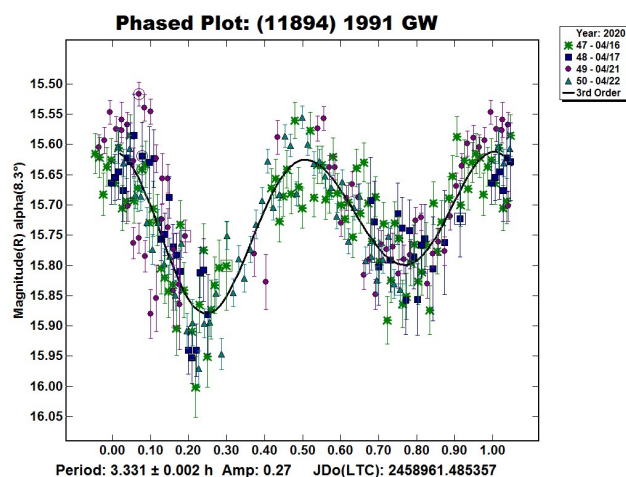
Giovanni Battista Casalnuovo,
Filzi School Observatory D12
Laives, ITALY
gb.minorplanet@gmail.com

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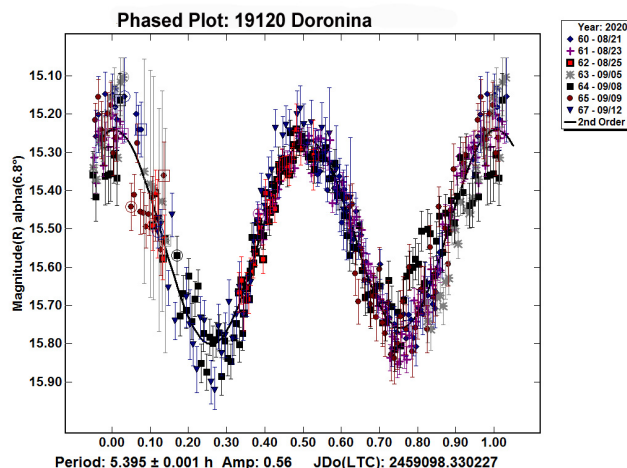
Photometric observations of two main-belt asteroids, (11894) 1991 GW, 19120 Doronina (1983 PM1), were made at the Filzi School Observatory (School in country Laives - Italy) MPC code D12.

CCD photometric observations, were made at the Filzi School Observatory, all are without filter (clear). All images were obtained with a 0.35-m reflector telescope reduced to $f/8.0$, a QHY9 CCD camera, and then calibrated with dark and flat-field frames. The pixel scale was 1.56 arcsec when binned at 4×4 pixels. All exposures were 120 seconds. The computer clock was synchronized with an internet time server before each session. Differential photometry and period analysis were done using *MPO Canopus* version 10.7.12.9 (Warner, 2018). Solar type stars from CMC15 catalog in R band were used as comparison stars.

(11894) 1991 GW. This main-belt asteroid was reported as a lightcurve photometry opportunity for 2020 April on the MinorPlanet.Info Gateway web site (<http://www.MinorPlanet.info>; hereafter referenced as MPI). (11894) 1991 GW was discovered in the year 1991 by Kawasato, N. at Uenohara. It is a main-belt asteroid with a semi-major axis of 2.35 AU, eccentricity 0.188, inclination 7.95° , and orbital period of 3.62 yr. Its absolute magnitude is $H = 14.20$. It was studied for four nights. The derived synodic period was $P = 3.331 \pm 0.002$ h with an amplitude of $A = 0.27 \pm 0.07$ mag. There were no entries in the LCDB (Warner et al., 2009) for this asteroid.



19120 Doronina (1983 PM1). This main-belt asteroid was reported as a lightcurve photometry opportunity for 2020 August on the MPI web site. 19120 Doronina was discovered in the year 1983 by L. G. Karachkina at the Crimean Astrophysical Observatory. It is a main-belt asteroid with a semi-major axis of 2.56 AU, eccentricity 0.215, inclination 7.98° , and orbital period of 4.12 yr. Its absolute magnitude is $H = 13.8$. It was studied for seven nights. The derived synodic period was $P = 5.395 \pm 0.001$ h with an amplitude of $A = 0.56 \pm 0.10$ mag. Pál et al. (2020) reported a period of 5.39151 h., which is in very close agreement with the result given here.



References

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- Warner, B.D.; Harris, A.W.; Pravec, P. (2009). "The Asteroid Lightcurve Database." *Icarus* **202**, 134-146. Updated 2020 June. <http://www.minorplanet.info/lightcurvedatabase.html>
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Number	Name	yyyy mm/dd	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
11894	1991 GW	2020 04/16-04/22	7.7 11.0	196.1	3.6	3.331	0.002	0.27	0.07	MB
19120	Doronina	2020 08/21-09/12	6.7 14.3	327.8	-10.4	5.395	0.001	0.56	0.10	MB

Table I. Observing circumstances and results. The phase angle is given for the first and last date. If preceded by an asterisk, the phase angle reached an extrema during the period. L_{PAB} and B_{PAB} are the approximate phase angle bisector longitude/latitude at mid-date range (see Harris et al. 1984). Grp is the asteroid family/group (Warner et al. 2009).