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Remarks on the period of U Leporis

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Citation

Hertzsprung, E. (1923). Remarks on the period of U Leporis. *Bulletin Of The Astronomical Institutes Of The Netherlands*, 2, 18. Retrieved from <https://hdl.handle.net/1887/5754>

Version: Not Applicable (or Unknown)

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Note: To cite this publication please use the final published version (if applicable).

I hold the hypothetical parallax $p_{(2)} = .0038$ for the most plausible value. In this connection it is worth while to remember, that the hypothetical parallaxes derived from the eclipsing elements of δ Orionis STEBBINS, *Ap. J.* **42**, 145; 1915) and *VV* Orionis (*Publ. Potsdam* **73**, 14; 1919) in connection with a surface brightness estimated from the colours of the stars are found to be about $.003$ or $.004$. These objects probably belong to the same cloud of Helium stars as ζ Orionis.

In a recent paper (*M. N.* **83**, 436; 1923) JACKSON has investigated the relation between mass and spectrum for visual double stars using the secular motion as criterion of parallax. In an earlier paper of the same writer (*M. N.* **81**, 2; 1920) the relation between $m + 5 \log p_{(M_1 + M_2 = 2)}$ and spectrum had been found for objects of the same kind. It would be of interest to see, which relation would thus be found between mass and absolute brightness, but the available material is still rather scanty for the purpose, merely because a considerable number of stars are needed

to get a reliable value of the secular parallax. Besides, it is a question, which value should be adopted for the solar motion relative to the absolutely faint stars, as many of these objects may belong to the peculiar moving group of stars with a space motion of more than 62 km/s as defined by OORT (*B. A. N.* **23**). For a number of these stars practically evenly distributed in the sky a comparison between radial velocity and angular proper motion (*A. N.* 4422, **185**, 92; 1910) would probably give the median absolute brightness as accurately as when derived from the reflected solar motion.

It is to be hoped that parallax observers will pay special attention to double stars with known angular orbital elements in case the parallax is large enough to be measured with a relative accuracy sufficient for a reliable determination of mass. I only mention the most interesting system of ξ Bootis, of which only very few rather discordant measures of parallax have been made.

Remark on the period of U Leporis, by *Ejnar Hertzsprung*.

The only systematic observations published of this star, the variability of which was noted by J. C. KAPTEYN on *CPD* plates (*A. N.* 2987), are those of R. TH. A. INNES (*Ann. of the Cape Obs.* **9**, 38B; 1903), who found that the variable is of the cluster type with a period of $^d.58144$.

On a *CPD*-plate with centre $4^h58^m, -21^\circ15'$ (1875), taken 1889 March 11 at an hour angle of $+2^h50^m$ the star was evidently near its maximum brightness. Adding this maximum and a more recent one by HARTWIG (G. MÜLLER and E. HARTWIG: *Gesch. u. Literat. d. Lichtwechsels etc.* **1**, 127; 1918) to the 10 maxima derived by INNES (*l. c.*) the formula Max. at J. D. helioc. M. T. Grw $2415013.3529 + (E-6776)/1.719774$ gives the following representation of the observations:

epoch	Max. hel.	phase in	
<i>E</i> -7156	M. T. Grw.	fraction of	<i>O</i> - <i>C</i>
		period	
	<i>d</i>	<i>P</i>	<i>P</i>
Kapteyn - 7156	2411073.3018	.003	+ .003
Innes - 865	14731.3640	6291.043	+ .043
" - 786	14777.2786	6370.006	+ .006
" - 442	14977.2862	6713.973	- .027
" - 399	15002.3279	6757.039	+ .039
" - 356	15027.2980	6799.982	- .018
" + 227	15366.3154	7383.016	+ .016
" + 263	15387.2230	7418.972	- .028
" + 340	15431.9911	7495.963	- .037
" + 387	15459.3223	7542.967	- .033
" + 435	15487.2709	7591.032	+ .032
Hartwig + 8355	20092.5118	15511.006	+ .006

The maximum of HARTWIG has been supposed to be given *l. c.* in helioc. M. T. Grw.

The frequency of changes in the sign of *O*-*C* is satisfactory, showing that there is as yet no sensible secular change in the period. The mean deviation *O*-*C* is $\pm .030$ and the mean error of the period $^d.581472$ is about $\pm .000002$.

The heliocentric phase in fractions of the period was calculated separately for each observation of INNES. The observations were then arranged according to this phase and divided into 22 groups of 10 or 9. The mean values thus found are:

phase	mag.	number of obs.	phase	mag.	number of obs.
<i>P</i>	<i>m</i>		<i>P</i>	<i>m</i>	
.0155	9.20	10	.4410	9.68	10
.0473	9.23	10	.4963	9.73	10
.0800	9.26	10	.5381	9.76	10
.1016	9.33	10	.5806	9.69	10
.1360	9.37	10	.6321	9.86	9
.1755	9.39	10	.7584	9.86	10
.2332	9.50	10	.8165	9.80	10
.2777	9.44	10	.8348	9.78	9
.3131	9.48	10	.8664	9.79	9
.3431	9.59	10	.9291	9.64	10
.3847	9.64	10	.9807	9.36	10

According to these figures the magnitudes at maximum and minimum are $9^m.20$ and $9^m.86$ respectively and the range accordingly $^m.66$.