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Citation

Binnendijk, L. (1947). A new comparison of photographic and photo-electric magnitudes in the Pleiades. *Bulletin Of The Astronomical Institutes Of The Netherlands*, 10, 259. Retrieved from <https://hdl.handle.net/1887/5585>

Version: Not Applicable (or Unknown)

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

BULLETIN OF THE ASTRONOMICAL INSTITUTES OF THE NETHERLANDS

1947 July 5

Volume X

No. 381

COMMUNICATIONS FROM THE OBSERVATORY AT LEIDEN

A new comparison of photographic and photo-electric magnitudes in the Pleiades, by *L. Binnendijk*.

At the time when the comparisons of my photographic magnitudes with those of the other series were made ¹⁾ I did not dispose of accurate photovisual magnitudes, so that the comparisons for determining the colour-equations had to be made with HERTZSPRUNG's effective wave-lengths I_λ . It appeared that there was a small non-linear difference between my system and the most accurate series, namely the photo-electric magnitudes of CALDER ²⁾.

Professor HERTZSPRUNG has now repeated the comparison between these two series and has permitted me to quote his results. He used in his solution CALDER's original data, the Leiden photographic and the mean photovisual magnitudes. In the same notation as in my previous study his formula is:

$$m = .209 + 1.004 m_B - .30 c, \\ \text{m.e.} \quad \pm 3 \quad \pm 3 \quad (\varepsilon = \pm m.014)$$

where c is the colour-index, Leiden photographic minus mean photovisual magnitude.

He also made a second solution, introducing an additional term with I_λ . It appeared that this last term has no influence at all on the solution.

While HERTZSPRUNG's letter was on the way, I made another solution using CALDER's original magnitudes, the mean photographic magnitudes and the mean colour-indices of the final catalogue. The result is:

$$m = +.220 + 1.001 \bar{m}_{pg} - .27 \overline{C.I.} \\ \text{m.e.} \quad \pm 3 \quad \pm 3 \quad (\varepsilon = \pm m.013)$$

It should be remarked that CALDER's magnitudes have contributed in $\bar{m}_{pg}$ about one quarter of the weight, after having been corrected for the quadratic term. But this fact cannot have much influence on the run of the $(O-C)$'s.

No. I	m	m_B	$\bar{m}_{pg}$	c	$\overline{C.I.}$	$O - C_1$	$O - C_2$	D
542	2.970	2.73	2.740	-.10	-.11	+.008	+.023	0'
870	3.718	3.46	3.462	-.13	-.12	+ 2	0	23
126	3.775	3.52	3.519	-.10	-.12	- 4	0	36
242	3.983	3.74	3.726	-.10	-.11	+ 9	- 3	28
323	4.297	4.06	4.044	-.10	-.11	+ 16	+ 2	18
156	4.368	4.10	4.099	-.14	-.13	- 3	- 9	38
117	5.595	5.34	5.332	-.06	-.10	- 9	- 9	38
255	5.913	5.65	5.646	-.09	-.10	- 7	- 13	34
265	6.558	6.29	6.299	-.11	-.10	- 4	- 4	32
540	7.028	6.79	6.807	.00	+.02	- 4	+ 3	11
742	7.202	6.97	6.989	+.07	+.09	- 18	- 7	20
216	7.438	7.20	7.210	+.08	+.07	- 26	- 17	29
341	7.589	7.35	7.364	+.04	+.09	- 15	- 19	17
1069	7.684	7.47	7.472	+.08	+.08	- 2	- 3	47
996	7.749	7.52	7.530	.00	+.02	+ 7	+ 6	37
924	8.244	8.06	8.068	+.12	+.12	+ 19	+ 23	28
447	8.729	8.61	8.609	+.35	+.38	+ 18	+ 11	43
146	9.010	8.85	8.863	+.35	+.34	- 22	- 5	34
206	9.044	8.90	8.902	+.32	+.32	+ 3	+ 5	34
1184	9.296	9.19	9.176	+.44	+.36	+ 6	+ 17	60
993	9.444	9.28	9.263	+.17	+.11	+ 29	+ 23	37
757	9.609	9.52	9.505	+.52	+.52	+ 1	- 9	16
681	9.851	9.76	9.755	+.55	+.57	- 9	- 14	9

¹⁾ *Leiden Ann.* 19, Part 2, 31, 1946.

²⁾ *H.A.* 105, 453, 1936.