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## COMMUNICATIONS FROM THE OBSERVATORY AT LEIDEN.

### Provisional search for internal motions in the group of the Pleiades, by *Ejnar Hertzsprung*.

A plausible lower limit for the total mass of the stars physically belonging to the Pleiades may be obtained by assigning reasonable minimum masses to the stars known as sharing the proper motion of the group. In this way a minimum total mass of about 150 times that of our sun may be assumed for the 200 physical Pleiades known at present.

An upper limit is defined by the fact, that the mean internal motion of the members does not surpass a certain amount. In order to shift the upper limit towards a smaller possible total mass it is necessary to increase the accuracy, with which the individual proper motions are known. In this way we will finally arrive at the detection of the real internal motions.

The investigation on relative proper motions in the Pleiades, still being carried out at Leiden by the kind support of several other astronomers, who have provided us with the indispensable material, has now reached a point where the first trace of internal motions seems to appear, though further measurements are necessary in order to settle the question definitely.

In this connection it should be remembered, that the reduction of the differential measures has been done by linear formulae, which eliminate the effect of a general rotation and of a change in the apparent size of the group. On the other hand some of the members may be close double stars, of which the fainter component is invisible and which show sensible orbital motion within the interval of time covered by the plates compared.

From the results so far available I have selected the 42 best proper motions, which are given in Table 1. The average number of pairs of plates used for these 42 stars is 39. A weight has been assigned to each individual result of relative proper motion according to the differences found between different pairs of plates. The 42 stars contained in Table 1 are those, for which the sum of the weights thus found is at least

TABLE 1.

No. Gaultier 1)	approximate phgr. magn.	relative proper motion in seconds of arc yearly		weight $\frac{1}{(m.e.)^2}$
		$\alpha \cos \delta$	$\delta$	
	m	$10^{-3} \times$	$10^{-3} \times$	$10^3 \times$
9	9.8	- 1.3	+ 1.6	1002
21	11.0	- .7	+ 1.4	1076
24	9.3	+ 1.3	- .6	1126
27	8.4	+ 1.2	- 1.8	1006
39	11.3	+ 1.9	- .3	1012
41	10.9	- .2	+ .2	1095
44	8.9	- 1.0	+ 1.2	1098
45	9.2	- 1.6	- .4	1180
56	8.3	+ .2	- .4	1044
59	9.0	- .0	- .0	1142
62	10.5	- 1.6	+ .0	1193
64	10.1	- .5	- 1.3	1214
66	9.9	+ 1.0	- 1.9	1273
70	11.0	+ 1.2	- 1.8	1222
73	8.2	- 1.8	- .1	1003
89	11.0	- .2	+ 3.8	1106
92	11.0	+ .1	- .3	1204
99	8.5	- 1.4	- .7	1021
103	10.6	- .6	- .9	1232
104	9.6	+ 1.2	- 1.8	1242
110	10.9	- .6	- 2.1	1062
112	10.9	+ .9	+ .8	1198
118	8.8	- 1.3	- 3.1	1020
121	8.6	+ 1.7	- 1.2	1059
123	9.6	+ 1.5	+ .2	1231
126	9.1	+ 1.2	- .5	1125
132	8.5	+ .6	+ 1.0	1071
149	11.1	+ .6	- .2	1192
159	10.2	+ .8	- .6	1321
173	9.9	- 2.9	+ .8	1237
177	8.7	- 1.4	- 2.2	1102
180	10.8	- 1.8	- 1.5	1275
181	10.3	- 2.1	+ .3	1320
189	10.4	+ .5	- .7	1323
193	9.5	+ .3	- .1	1223
194	10.6	- .5	+ .3	1202
207	11.6	+ 1.4	- 1.0	1057
218	11.4	- .5	- .6	1086
220	10.8	+ 2.1	+ 1.1	1183
227	8.2	- 1.4	- 1.6	1001
244	11.4	+ .4	+ 2.1	1037
245	8.9	+ 2.8	- .7	1089

1) *Bull. de la Soc. astron. de France* 14, 441; 1900.