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THE BRIGHTNESS OF THE QUASI - STELLAR RADIO SOURCE 3C 48 ON HEIDELBERG PLATES

The light variation of the quasi-stellar radio source 3C 48 - like that of the radio galaxy 3C 273 - can be traced back over 60 years.

The variability of 3C 48 was discovered by SMITH and HOFFLEIT (3) and by MATTHEWS and SANDAGE (1). On a pair of plates of the Heidelberg plate collection taken in 1902 with the 16" Bruce astrograph the object is clearly visible. In 1963 twelve plates were taken by SCHMIDT (2) with the same instrument for aberration measurements of 3C 48. All these plates were measured with the Sartorius iris-diaphragm photometer of the Heidelberg Observatory. The magnitudes of our comparison stars were derived by comparison with Selected Area 45, lying within the field of our plates. For the comparison stars B and D, MATTHEWS and SANDAGE's photoelectric B-values - fitting well into our sequence - have been adopted as photographic magnitudes. Not all of our comparison stars are identical with those used by SMITH and HOFFLEIT for the investigation of 3C 48 on Harvard plates. On three good plates we compared also these stars with our magnitude sequence. There exists a scale difference of +0.75 magnitudes between SMITH and HOFFLEIT's and our system in the range of $15^m.5$ to $16^m.5$.

The mean magnitudes of the comparison stars are inserted in Table I. Table II. contains the magnitudes for 3C 48 obtained on our plates.

Table I

| Comparison stars | | m _{pg} | Remarks |
|-------------------|-----------------|-----------------|---|
| SMITH HOFFLEIT | Heidel- berg | | |
| C | | 13.30 | |
| D | | 14.31 | |
| E | B | 14.03 | MATTHEWS and SANDAGE's comp. star |
| E' | | 14.71 | |
| F | D | 15.20 | MATTHEWS and SANDAGE's comp. star |
| F' | a | 15.08 | |
| G | | 15.18 | |
| G' | c | 16.07 | |
| H | | 16.44 | |
| | b | 15.99 | |
| | d | 16.26 | |

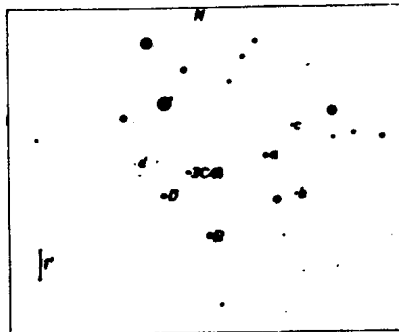


Table II

| J. D. | 3C 48 m _{pg} | J. D. | 3C 48 m _{pg} |
|--------------|--------------------------|--------------|--------------------------|
| 241 6019.428 | 15.85 | 243 8321.469 | 16.12 |
| 6019.428 | 15.95 | 8357.456 | 16.07 |
| 243 8226.505 | 15.95 | 8370.295 | 16.03 |
| 8234.520 | 16.11 | 8380.498 | 16.10 |
| 8237.517 | 16.32 | 8382.283 | 16.10 |
| 8241.537 | 16.15 | 8399.381 | 16.08 |
| 8290.476 | 16.25 | 8411.290 | 16.30 |

Literature

- 1/ MATTHEWS, T. A. and SANDAGE, A. R.: *Astrophys. J.* 138, 30 (1963)
- 2/ SCHMIDT, Th.: *Zeitschrift f. Astrophys.*, in print (1964)
- 3/ SMITH, H. J. and HOFFLEIT, D.: *Publ. Astr. Soc. Pacific* 73, 292 (1961)

E. H. GEYER
Landessternwarte
Heidelberg - Königstuhl