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POSSIBLE OPTICAL COUNTERPART TO THE GRBS  
1979 MARCH 25B (1810+31)

A preliminary evaluation of the data obtained by checking 1733 plates from the Sonneberg Observatory collection ( Central Institute for Astrophysics of the Academy of Sciences of the GDR ) has revealed a possible optical counterpart to the gamma ray burst source ( GRBS ) 1979 March 25b. The data represents about 1807 hours ( nearly 0.2 year ) of cumulative exposure.

The object was detected on 3 different plates at the same position. The preliminary coordinates are RA = 18 h 09 m 27  $\pm$  3 s, d = + 31<sup>o</sup> 23.0'  $\pm$  0.5' ( 1950.0 ). The plates were taken on 1946 March 27, 1946 August 31 and 1954 April 27. In all three cases, the images of the object exhibit structure somewhat different from those of stars, indicating short flash as a possible explanation of these images. The position of the object is closely outside ( about 6.5 arcmin away from the centre ) the error box given by Laros et al. ( 1985 ).

Preliminary estimated blue magnitudes for 1 sec optical flash lie in the range 4 - 7, resulting in possible gamma ray to optical fluency ratios  $E_{\gamma}/E_0$  of order  $10^2$  to  $10^3$ .

The position of the object proved to be empty on the POSS prints indicating enormous amplitude of brightening and, consequently, eliminating the possibility that the object is a classical variable star.

As the object appears on 3 independent plates at the same position, its reality seems to be considerably more certain than the reality of images found previously by other authors on only one plate. Nevertheless, great variety of properties of photographic emulsion being taken into account, we cannot yet be absolutely sure that the images detected indeed represent the true optical counterparts to GRBS.

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Reference :

Laros, J. et al., 1985, Ap. J. 290, 728.