

PROPER MOTION DETERMINATION OF THE X-RAY OBJECT 3A2254-033 USING THE
ASTROGRAPHIC CATALOGUE OF THE SAN FERNANDO ZONE

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ABSTRACT. The Astrographic Catalogue has been used to measure the proper motion of the X-ray object 3A2254-033.

1. INTRODUCTION

The Astrographic Catalogue and the 'Carte du Ciel' plates, taken almost a century ago, can be used to find the proper motion of special objects without astrometric history.

An example of this has been the determination of the proper motion of the optical counterpart of the X-ray object 3A2254-033.

Data from the San Fernando Zone (Dec. -3° to -9°) of the Astrographic Catalogue were compared with a modern observation by the same telescope, the 'Carte du Ciel' standard astrograph. This telescope (Fig.1), still in use, is now engaged in the measurement of minor planet positions for the Input Catalogue to be used by the HIPPARCOS astrometric satellite mission, and in second epoch plates of special objects in the San Fernando Zone.

2. THE FIRST EPOCH (1893.75)

The X-ray object 3A2254-033 is the star 154 on Plate 1329 of the San Fernando Zone (Fig. 2). The epoch is 1893 Oct. 2. Its photographic brightness was about $13^m.5$.

A new determination of the plate constants was made using the X,Y positions on the plate in the Astrographic Catalogue for 12 stars identified on the plate, combined with the equatorial coordinates given in the Smithsonian Astrophysical Observatory Catalogue (SAO). The position derived for the X-ray object at Epoch 1893.75 was:

$$\begin{aligned} \text{RA} &= 22^{\text{h}} 52^{\text{m}} 43^{\text{s}}.054 \pm 0^{\text{s}}.018 \\ \text{Dec} &= -3^{\circ} 26' 39''.54 \pm 0''.16. \end{aligned}$$

3. THE SECOND EPOCH (1979.86)

For the modern epoch position, a new plate was taken with the same telescope. The X,Y coordinates were measured using a Zeiss Ascorecord machine. Reductions were made using the same 12 SAO calibration stars, giving for the X-ray object at epoch 1979.86

$$\begin{aligned} \text{RA} &= 22^{\text{h}} 52^{\text{m}} 43^{\text{s}}.095 \pm 0^{\text{s}}.013 \\ \text{Dec} &= -3^{\circ} 26' 40''.73 \pm 0''.14. \end{aligned}$$

4. RESULTS

Comparing the positions at the two epochs, the resulting annual proper motion of 3A2252-033 is:

$$\begin{aligned} \text{RA} &= +0''.007 \pm 0''.004 \\ \text{Dec} &= -0''.013 \pm 0''.002 \end{aligned}$$

This result has been published by Quijano (1980).

An earlier determination had been made by Argue and Ward of IOA Cambridge. For the first epoch the procedure was exactly as described in Section 2 above; for the second, measurements were made using the prints of the Palomar Observatory Sky Survey at Epoch 1953.68. The resulting proper motion was similar to that given above but with a mean error about 4 times larger. The advantage of using an astrometric plate rather than a paper print is evident.

REFERENCES

- Argue, A.N. & Ward, M.J. 1980, *The Observatory*, **100**, 35.
 Quijano, L. 1980, *The Observatory*, **100**, 119.

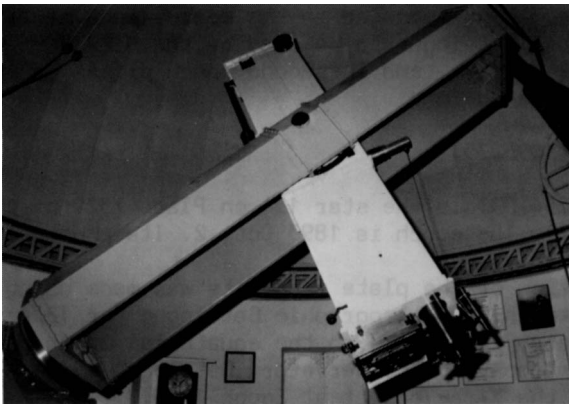


Figure 1. The San Fernando Astrograph.

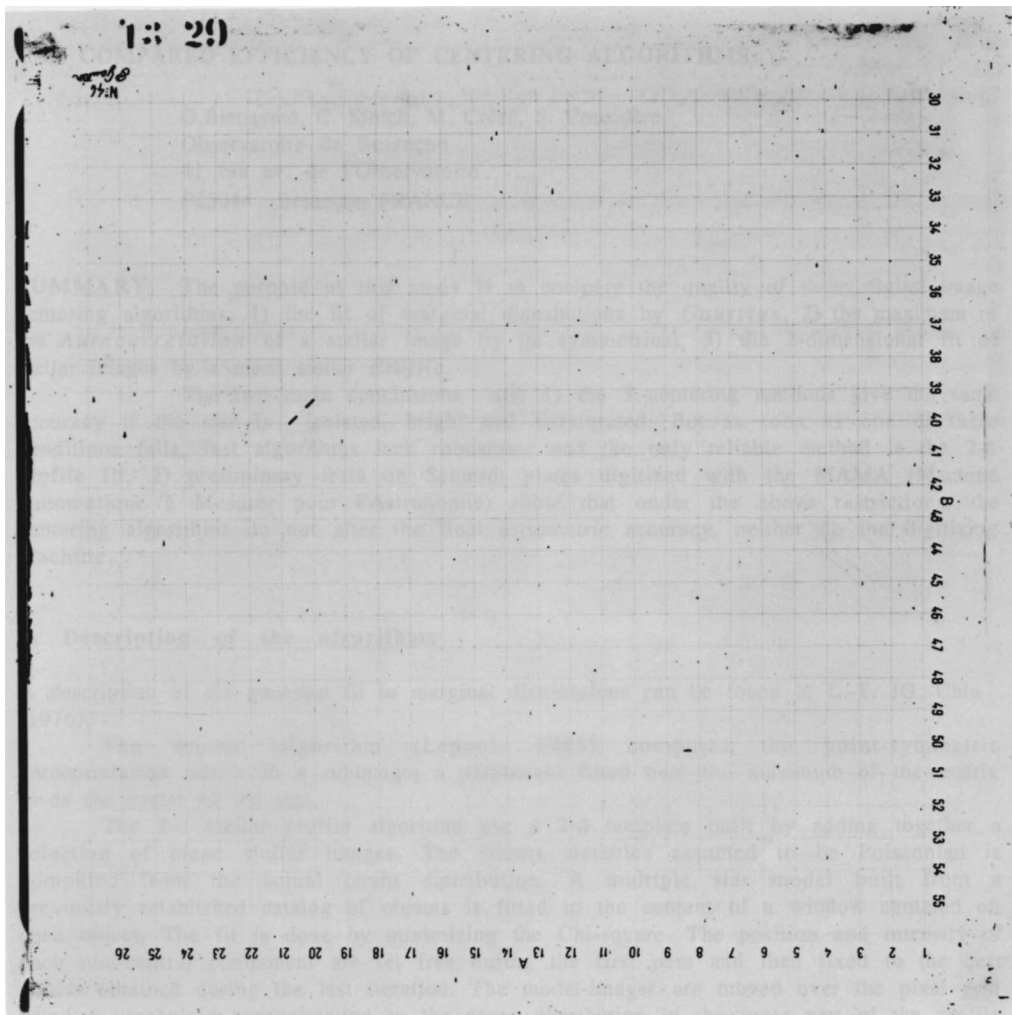


Figure 2. A reproduction of Plate No. 1329 of the San Fernando Zone containing three exposures and the 5 mm-interval reseau. The X-ray object is situated between the inclined bars.