

A PROPOSAL FOR SCANNING MERIDIAN CIRCLE

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The space based determination of astronomical data will have significant advantages over the ground based ones. However, in the mean time the requirements for traditional astrometry technique do not decrease, but, on the contrary, increase, especially in view of the existing plans for large programs of ground based determinations of absolute and differential positions of stars and solar system bodies.

At present, progress in classical ground based equipment (meridian instruments) is made only by automation - photoelectric micrometers and automatic circle reading devices. However, it is quite clear that only the full automation both on ground and in space can be the most effective. That requires fully automatic meridian instruments, and the elimination of any labor-consuming operations, such as, visual measurements, manual operation and routine calculations.

In our opinion, the simplest way in this direction is the construction of scanning meridian circle (SMC).

Calculations show that in the presence of devices for fast reading of a divided circle and of star positions in the field of telescope, a fast transit circle with a continuous working scanning tube can be created on the basis of TV equipment.

When the recording time of a single circle reading is $1 \cdot 10^{-4}$ sec and the rotational speeds do not exceed 7.5 deg/min, the reading error for displacement remains smaller than 0.05". The time required to record star transit in the field of telescope is 2-4 sec., quite sufficient to neutralize rapid and high-frequency variations of refraction seeing components when observations are made in locations with good astroclimate.