

I. PHYSICS

Astrophysics (Solar Corona)

**DETERMINATION OF CORONAL TEMPERATURE DISTRIBUTION BY
MEASURING THE DOPPLER WIDTHS OF THE GREEN CORONAL LINE
5303Å (Fe XIV) AT DIFFERENT POINTS IN THE CORONA**

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AIM was to determine the coronal temperature distribution by measuring the Doppler widths of the green coronal line 5303Å (Fe XIV) at different points in the corona.

Keywords : Coronal Temperature Distribution; Doppler Widths; Green Coronal Line; Fabry-Perot Interferometer; Interferogram.

EQUIPMENT

An optically contacted Fabry-Perot Interferometer (300 μm spacer) coupled with a 7Å band width interference filter centred at 5303Å produced the fringes of the green

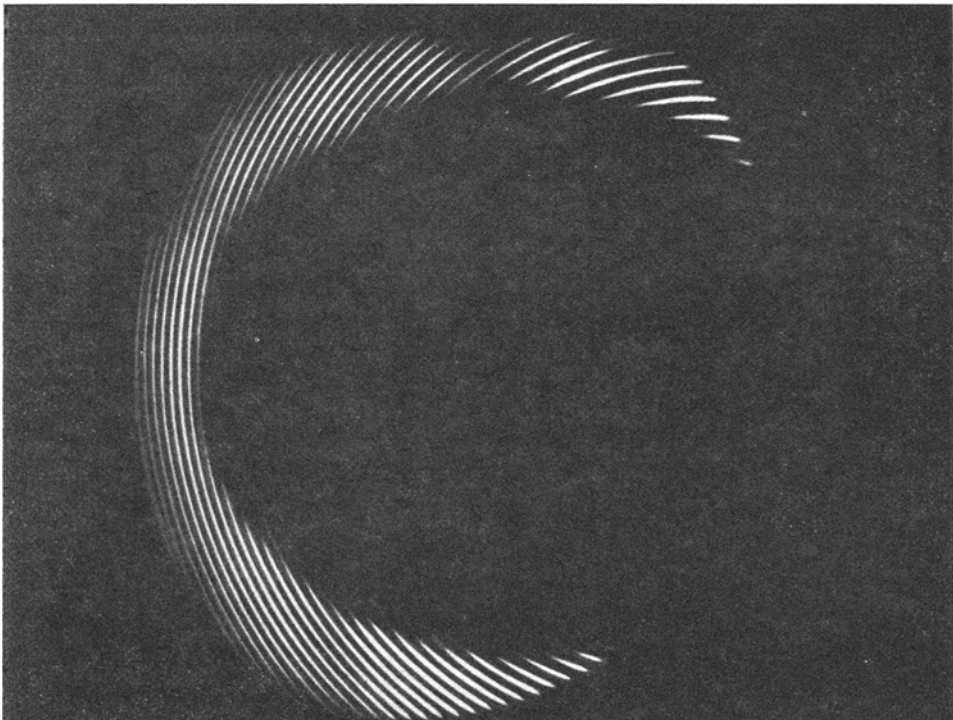


FIG. 1 (see p.6)

lines which were subsequently photographed on Kodak Tri X (400 ASA) 35 mm film. A 6 inch $f/15$ lens served as light collector. The centre of fringe pattern was off centred (with respect to solar centre) by 16 arc min so that a few fringes could be obtained radially along some azimuths.

Four exposures were taken during the 2^m and 46^s of totality. The exposure times were 4 sec., 10 sec., 30 sec., and 90 sec. (Fig. 1).

RESULTS

Reduction of the interferogram to yield coronal temperatures is nearly complete. Most of the temperature values lie between 2 and 4 million degrees Kelvin. Along some azimuths, the temperatures show a tendency for oscillation. Further analysis is in progress.

LOCATION

Gadag, Karnataka (Long. 15° 25' N., Lat. 75° 27' E).

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