

## A HYDROSTATIC MODEL OF UMBRAL CORES

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### ABSTRACT

A typical hydrostatic model of umbral cores is constructed, which accounts for photoelectric measurements of both Na I D<sub>2</sub> ( $\lambda$  5890 Å) line profile and umbral core-to-disk continuum intensity ratio (ranging from 4000 Å to 6500 Å) made by Mullan and Wyller (1972), making use of their high resolution interferometer Echelle spectral scanner. Theoretical line profile of Na I D<sub>2</sub> and computed continuum intensity distribution of this model are compared with the observations. The temperature of umbral cores is found to be lower than that of their ambient umbral region by 300K to 500K.

Making use of this model, molecular equilibrium calculations are made in order to resolve the current dispute on the existence of C<sub>2</sub> lines in the spectra of sunspots. It is found that the umbral cores yield unfavorable environment for C<sub>2</sub> formation.

## NINETEEN YEARS OF OKAYAMA ASTROPHYSICAL OBSERVATORY

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### ABSTRACT

The Okayama Astrophysical Observatory: one of the observing stations of the Tokyo Astronomical Observatory. This Station was opened at the fall of 1960 with two reflectors of the aperture 188cm and 91cm.

The bigger one was made by the English factory "GRUBB & PARSONS". The available foci are NEWTON, CASSEGRAIN and COUDÉ. Each Focus is used according to the purpose of the observations for different celestial objects: planets, stars, nebulae, star clusters and galaxies.

First this instrument was designed for the photographic observation the direct photography at the Newtonian Focus and spectrography both at the Cassegrain and Coudé foci. Recently the electronic devices are developed for these instruments: Image Tube Spectrograph, multi channel Spectrophotometer, etc.

The smaller one was made by the Japanese factory "NIKON." It was designed as the photoelectric photometer. But quite simple prism spectrograph was made by our machine shop and last year very excellent "Atlas of Representative Stars" was published from the University of Tokyo Press.

We are now revising the old fashioned control system.

In these 19 years, the number of the astronomical observing population becomes from five to over hundred. I believe that those instruments are the milestone of Japanese Astronomy.