profiles as wide bumps and depressions. In the nuclear region ($r<3'$) of M31, the west side is brighter while in the outer region the east side is brighter. In the central part of both M31 and M81, the B-V color is almost constant. But U-B in M31 and B-V in M81 show increasing blueness with distance from the center. In NGC 2403 there appears an asymmetry between east and west sides and an excess in B is observed at the ring-like region. No systematic variation of color in the visible range is detected in NGC 2403. From photographic photometry of NGC 2403, the dark lanes and spiral arms are identified and compared with the photoelectric results. The photometric results are compared with radio data.

Structuree of a late type spiral galaxy NGC 7793

Mun-Suk Chun

Yonsei University

Using the empirical model, we tried to calculate the composition of NGC 7793. The calculated mean abundance is $[O/H]=-0.39$, $[N/O]=-0.71$ and $[S/O]=0.36$. However' we could not find any radial abundance gradient for this galaxy. This uniform abundance seems the general character of the late type spiral galaxy.

H-R Diagram for Nearby High-Velocity Stars*

Sang-Gak Lee

Seoul National University

Two hundred nearby high-velocity stars were selected on the basis of tangential velocity larger than 100km/sec. Color-color diagram and color-magnitude diagram as well as M_{bol} versus log T_{eff} diagram for these high velocity stars have been obtained. H-R diagram for nearby highvelocity group is found to be of a group of stars, at least, about $(5\sim10)\times10^9$ year old and resembles an old open cluster.

Evolution of the Solor Neighborhood I**

See-Woo Lee

Seoul National University

As a part of the study on the evolution of our Galaxy, physical and kinematic properties of parallactic stars were investigated in the aspect of the Galactic evolution. Some results about the evolutionary characteristics of the parallactic stars are presented.

The Presence of C_2 Lines in Sunspots

Hong-Sik Yun and Hyung-Mok Lee

Seoul National University

High spatial and spectral resolution observations have been made over a sunspot (SPO 6403) with the Echelle Spectrograph at the Vacuum Tower Telescope, Sacramento Peak Observatory, searching for C_2 lines in sunspots.

* This work is supported in part by KOSEF.

** Author is grateful to the KNAO for telescope time and support.

Our observed spectra, scanned with SPO's fast microdensitometer, clearly show strengthening of C_2 lines in the penumbra relative to the photosphere and much weakening in the umbra in agreement with the predictions made by our molecular equilibrium calculations (Lee et al., 1981), corroborating the presence of C_2 lines in sunspots.

Pulsations of Plane Polytropic Configuration

Kyu-Hong Choi
Yonsei University

The periods and pulsation modes of the first four overtone pulsations are derived for plane polytropic configurations of indices n=1, 1.5, 3 and 5.

The periods of the fundamental modes for plane polytropic configuration are found to be consistent with the observed values for active galaxies or quasars.

Photoelectric Observations of NGC 2264*

Suk-Minn Kwon and See-Woo Lee
Seoul National University

To investigate physical properties of an extremely young open cluster, NGC 2264, we have performed *UBV* photometric observations during the period between January and March 1982. The color-magnitude diagram of the cluster was transformed into the theoretical H-R diagram, from which the age of the cluster was estimated. Discussing some positional pecularities of some members in H-R diagram, we shall examine the pre-phase of the zero-age main sequence for this cluster.

Distribution of Density, Temperature and Abundance in the Orion Nebula

Dong-Woo Kim and Seung-Soo Hong
Seoul National University

In order to derive the distributions of electron density, temperature and gas phase metal abundances within the Orion Nebula, we have performed non-LTE analysis to the radio observations of recombination lines and continuum flux over the frequency range from 0.1 GHz to 100 GHz. Our derived distribution of density is essentially the same as the result by Lockman and Brown (1975) in the following sense: The Orion Nebula has a very dense core of ~0.1pc size at the center, and this central core is surrounded by a rapidly declining density-region of ~0.5pc thickness, which is followed by an extended low density envelope of ~1pc radius. However, we have explicitly included the thermal balance condition in our non-LTE analysis, hence our derived distributions have internal consistencies. This enables us to derive the radial abundance variations of Oxygen and Nitrogen. The gas phase concentrations of these cooling elements have about the solar values at the very central part of the nebula, then decrease slowly ourward, and finally become about one quarter of solar values in the outer extended envelope. Such an outward decrease of gas phase abundance is interpreted as an outward increase of dust concentrations in the Orion Nebula.

* Authors are grateful to the KNAO for telescope time and support.