

level of 99%. This constitutes strong evidence that the intracluster medium is substantially magnetized and the most probable field strength is estimated to be $0.5 < B(\text{ic}) < 1.5$ microgauss.

A very large scale magnetic field is also detected in the Coma cluster of galaxies which appears as a diffuse radio emission connecting Coma C and Coma A complexes observed at 326 MHz with the WSRT. The equipartition field strength of the region is estimated to be $0.2(1+k)^{2/7}$ microgauss, provided that its spectral index ranges -1 to -2. This is the first time I believe this has been observed extending in such a large scale from a galaxy cluster core region.

전파 Jet 3C449에 대한 동역학적 모형

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전파원 3C449의 거울 대칭형 전파구조에 대한 모형을 설정하고, 그로부터 관측되는 jet blob의 운동 경로를 수치계산함으로써 3C449의 전파구조에 대한 형성 요인들을 추정하였다.

본 연구에서는 jet원의 모형으로 은하핵의 돌레를 도는 Black Hole을 도입하였으며 jet원은 공진 궤도면에 수직하게 분출된다고 가정하였다.

한편 jet blob의 운동을 기술하는데 있어서는 중력과 ram 압력, 그리고 모은하의 공간운동의 영향을 함께 고려하였다.

The Analysis of the H II Region Spectra in the Spiral Galaxy NGC 300

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IPCS spectra have been obtained for No. 1 (Sersic 39) H II region in the Scd galaxy NGC 300 (Sculptor Group). Observations were carried out on September 20~23, 1977 using the Anglo-Australian Telescope with the ROG Cassegrain spectrograph and UCL Image Photon Counting System in two-dimensional mode with the eight channels in $\lambda\lambda 3600\sim 5500\text{\AA}$ (Blue) and $\lambda\lambda 4700\sim 8500\text{\AA}$ (Red). From the line intensities we calculated electron temperatures, electron densities and chemical abundances using the empirical calibration method and the photoionization model sequence of Evans and Dopita (1985).

The electron temperatures and abundances do not show any significant radial gradient. These abundances are lower than the solar values and Orion nebulae. The spectra is consistent with ionizing stars having the effective temperature of 45,000K (in Blue) or 40,000K (in Red) on the photoionization model sequence of Evans and Dopita, and Z is fitted to $0.5 Z_{\odot}$ which is consistent with the value deduced from line intensities.

An Analysis of Velocity Distribution in Coma Cluster of Galaxies

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We have analyzed the radial velocity data of Coma cluster of galaxies. The line-of-sight velocity contour is found to be non-spherical. The velocity dispersion at large distance is greater along the major axis of the galaxy distribution than along the minor axis. If the gravitational potential is oblate-like, this result indicates that the orbits of galaxies are predominantly non-radial (between isotropic and circular) while the orbits are predominantly radial if the potential is prolate-like. The major axis of the velocity dispersion contour coincides well with a line connecting the centers of Coma and A1367 clusters of galaxies.

Tidal Density of Globular Clusters and Galactic Mass Distribution

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The tidal densities (defined as the mean density within tidal radius) of globular clusters and dwarf spheroidals are analyzed to explore Galactic mass distribution and internal dynamics of clusters. It is found that the "observed" King's tidal radii should be systematically larger than the "actual" values in order to be consistent with simple singular isothermal model for Galaxy, if the orbits of clusters are isotropic. Recent Fokker-Planck calculations by Lee and Ostriker for spherical stellar systems including Galactic tidal field indicate that about a factor of 1.5 reduction from King's tidal radii is necessary to obtain the realistic tidal radii.

Correlation between the Metal Abundance $[Fe/H]$ and the DDO Color Indices among Globular Clusters

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Integrated DDO color indices were compared with the metal index $[Fe/H]$ of globular clusters. 80 clusters were used for this comparison. Among color indices C(42-45) is the most sensitive index to the $[Fe/H]$ value. The possible correlation of C(42-45) to $[Fe/H]$ was defined as;

$$C(42-45) = 0.16[Fe/H]^2 + 0.62[Fe/H] + 1.12$$

This good correlation was assumed to come from the existence of G-band in C42 filter band. However C(35-38) color index showed the anticorrelation with the $[Fe/H]$ index, which might come from the presence of the violet CN in C38 filter band.

산개 성단의 초기 질량 함수와 광도 함수

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산개 성단의 초기 질량 함수를 여러 형태로 가정하여 이론적인 진화 모형을 따라 성단의 나이 만큼 진화시켜 모형 산개 성단을 구성하고, 구성된 각 모형성단의 현재의 광도 함수와 관측 자료로부터 얻은 현재의 광도 함수를 비교하여, 보다 사실적인 초기 질량 함수를 조사해 보았다.

관측이 잘 이루어진 9개의 산개 성단에 대한 조사 결과 각기 성단에 따라 초기 질량 함수의 형태나 그 기울기가 다양한 성질을 갖는다는 사실을 확인하였다.