

Eddington luminosity for a 10km neutron star with mass 1.4 times solar mass.

On the A-type Contact System DO Cas

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New UVB photoelectric observations of EB-type contact binary DO Cas were obtained at the Sobacksan Observatory. These observations covered the eclipse portions of the light curves and twice the minimum light. Both the light curves and the radial velocity curve for the primary of DO Cas (Mannino 1958) have been solved simultaneously using the Wilson-Devinney synthesis code. New geometric, photometric, and absolute elements for this system are given.

Abundance and Chemistry of Interstellar HOCO⁺

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We derive HOCO⁺ column densities $\sim 10^{15} \text{cm}^{-2}$ toward the Galactic center and $< 10^{12} \text{cm}^{-2}$ for cold dark clouds from observations and an LVG model. We mapped the HOCO⁺ $4_{04}-3_{03}$ line toward Sgr A. The fractional abundance of HOCO⁺ in the Galactic center region is three orders of magnitude larger than predicted by quiescent ion-molecule chemistry and an order of magnitude larger than predicted by a MHD shock model. If HOCO⁺ traces interstellar CO₂, the implied high abundance ($[\text{CO}_2] \sim [\text{CO}]$) in the Galactic center may result from UV photolysis of grain mantles.

세포형 구조 우주와 Fractal

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뜨거운 보이지않는 물질이 지배하는 표준 우주 모형 안에서 관측된 은하 및 은하단분포의 두점상 관관계 함수로 대표되는 큰크기 구조는 “세포형” 구조를 보임을 알 수 있다. “세포형” 큰크기 구조를 fractal 구조와 비교함으로써 우주의 균질성의 한계를 규정 짓는 “한계거리”가 존재해야 함을 보였고, 이에 의한 우주 배경 복사 불균질성의 각의 크기를 계산할 수 있었다.

Compact HII region K3-50 주변의 분자운에 대한 연구

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Compact HII region들이 모여 있는 W58지역에서 small optical nebula인 K3-50, NGC 6857과 radio continuum source들에 대한 CO와 ^{13}CO 를 관측하였다. 이 지역에서 $N(\text{H}_2)$ 는 $0.1\sim 1\times 10^{26}\text{cm}^{-2}$ 이며, 전체 가스 질량은 약 $1\sim 2\times 10^5 M_\odot$ 이다.

NE-SW 방향의 velocity gradient가 $0.1\text{kms}^{-1}\text{pc}^{-1}$ 로 추정되었으며, 각 component에서의 CO outflow와 특성, 연쇄적인 별 형성 등을 논한다.

IC143NW에 대한 CO 분자선 관측

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IC443NW(RA(1950)= $06^h 10^m 52^s$, DEC(1950)= $22^\circ 53' 00''$) 영역에 대해 ^{12}CO 및 ^{13}CO 분자선을 관측하였다.

중심부의 안테나 온도 T_A^* 는 ^{12}CO 의 경우 $\sim 4\text{K}$, ^{13}CO 의 경우 1K 로 관측 되었다.

분자운의 평균 V_{LSR} 은 $\sim 9\text{km/sec}$ 정도로서 IC443 영역의 운동 속도(Lee 1990)이 $\sim 4\text{km/sec}$ 인 데 비해 5km/sec 정도의 속도차를 보이고 있다.

관측으로부터 얻어진 분자운 중심의 중성 수소 분자의 column 밀도는 약 $6\times 10^{21}/\text{cm}^2$ 이다.

분자운의 구조와 IC443 주위 분자운과의 관계에 대해서 논하고자 한다.

CO Isotopes Observations of the Orion a Molecular Cloud

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The Orion A molecular cloud has been observed for ^{12}CO and ^{13}CO ($J=1-0$) with the 14m mm radio telescope at the Daeduk Radio Astronomy Observatory during Spring session in 1990. A total of 672 spectra have been obtained at spots located every $1'$ apart over the region centered on Orion A. Analyses on these have yielded a set of data regarding velocities, optical depths, temperatures, and densities for the spots. Structures and kinematics of the Orion A molecular cloud will be discussed with these database.

A Fine Resolution Map of the Zodiacal Light Distribution

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Two dimensional $(\lambda-\lambda_\odot, \beta)$ brightness distributions of the zodiacal light at two wavelengths, $5,080\text{\AA}$ and $5,300\text{\AA}$, have been obtained with a spatial resolution of 2° . Maps at the two wavelengths are remarkably similar to each other, which demonstrates the consistency in the reduction procedures. The relative uncertainty in the resulting brightness of the zodiacal light is about 10% or less, which is an improvement of factor two upon the previous error level. The morning zodiacal light is generally brighter than the evening zodiacal light by about $10 S_{10}(V)_{G2V}$. The peak brightness in the Gegenschein is located at $1^\circ.5$ below the ecliptic. The asymmetry of the morning zodiacal light with respect to the evening zodiacal light, and the misalignment of the