

정은 영역에 비한 강한 외부복사장이 방출되기 때문에 홍염의 내부에너지 상태를 심각하게 변화시킨다. 본 연구에서는 여러 관측 사실을 토대로 홍염의 위치에 따른 외부복사장 세기 및 방출스펙트럼의 변화에 대한 연구결과를 수소선과 Na I선을 대상으로 소개한다.

Substructures of Barnard 361

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The detailed substructures of a prototype globule B361 was studied by using the blue and red intensity maps integrated over two different velocity ranges in the $^{13}\text{CO}(J=1-0)$ line profile. Our analysis reveals that B361 is composed of three sub-clumps. One of the three recedes from us and the other two approach us. Our LTE analyses estimated the masses of each clumps to be $220 M_{\odot}$ for the receding one and for the two approaching ones $130 M_{\odot}$ and $150 M_{\odot}$, respectively. The maximum difference of velocity between the clumps is found to be 2 km/s. At the distance of 600 pc and with the angular separation between the clumps, this amount of velocity difference is insufficient for the clumps to escape from each other. We thus conclude that B361, at least in its central part, is composed of several clumps and that they form a bound system. It is also pointed out that the previous studies with spacial resolutions poorer than that of ours often misinterpreted the movement of the clumps as a general rotation for this globule.

^{12}CO , ^{13}CO and C^{18}O Observations toward OMC-1

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Interstellar carbon monoxide and its isotopes toward Orion Molecular Cloud - 1 (OMC-1) were observed with the 13.7m radio telescope at the Daeduk Radio Astronomy Observatory.

We derived the excitation temperature, optical depth, column density, and isotope abundance ratios from the observed $J=1-0$ lines of ^{12}CO , ^{13}CO and C^{18}O in a region $11' \times 11'$ centered on BN-KL.

The one arcmin spacing maps reveal the compressed gas structure behind the shocks produced by the expansion of the ionized gas into the molecular cloud. Also we find a systematic gradient in the $^{12}\text{C}/^{13}\text{C}$ isotopic ratio across the OMC-1. Uncertainties in the determination of the CO isotopic abundances are also discussed.

VLA H I 21 cm Line Observations of the Old Supernova Remnant CTB 80

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We performed H I 21 cm line observations of the old supernova remnant (SNR) CTB 80 using the VLA D-array in order to study the structure of the fast expanding SNR shell detected by Koo et al. (1990). Koo et al. found that the shell was clumpy, but the angular resolution (3.3) of the Arecibo telescope that they used was not enough to see the structure of clumps in the shell. Our VLA observations, which provided a much higher angular resolution ($\sim 45''$), show that the clumps generally have a complicated structure with a dense ($n_H \sim 100 \text{ cm}^{-3}$) core surrounded by a relatively-diffuse envelope. We discuss an interesting possibility that some of these clumps may have 'overshot' the expanding SNR shell.

오리온 KL 지역에 대한 산소 복합분자의 전파간섭계 관측

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오리온 KL 지역은 새로 별이 형성되고 있는 지역으로 매우 복잡하고 특이한 구조를 보이고 있다. 이 지역은 보다 작은 크기 (수 arcsec)의 세부구조들로 이루어져 있는데 대표적인 세부 구조로는 "plateau", "hot core", "compact ridge (southern condensation)" 등이 있다. 이 중에서 특이하게 산소를 포함한 분자들이 매우 풍부하게 존재하는 것으로 알려진 "compact ridge"에 대하여 노베야마 전파간섭계를 이용하여 HCOOCH₃, (CH₃)₂O, CH₃OH 등의 분자들을 관측하였다. 이 결과로부터 "compact ridge"와 중심에 있는 IRc2와의 관계, 기존에 제기되었던 성간먼지와 H₂O의 역할, 최근에 제기된 CH₃OH의 영향 등에 대하여 알아본다.

산개성단 M35의 광전관측

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소백산 천문대의 24인치 반사망원경을 이용하여 산개성단 M35 영역에 있는 100개 이상의 별들에 대한 UBV 광전관측을 수행하였다.

이 관측자료를 분석한 결과, 이 성단의 색초과 $E(B-V)=0.3\sim 0.4$ 에 걸친 차등소광이 있고, 성간소광을 보정한 색-등급도를 등년령곡선에 맞춘 결과, 이 성단의 거리지수 $V_0-M_V \approx 9.5$ (약 810 pc)이며, 나이 $\log(\text{age}) \approx 8.1$ 을 얻었다.

VELOCITY ANALYSIS OF M13 BY MAXIMUM LIKELIHOOD METHOD

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We present new approach to analysis of velocity data of globular clusters. Maximum