developed train of clumps of about a few solar masses, and is situated in the dark dust complex between M42 and M43. The cloud's motion is analysed to be moving at about 2.6 km s^{-1}, and is calculated to transverse the Orion Nebula ~2 pc above from the nebula center, toward the direction of about 60° to the line of sight. This cloud had undergone a tidal splitting about a million years ago and had formed a very thin and long cylindrical core well before being engaged in the collision. General implications of this phenomenon are discussed in relation to star formation mechanisms in the GMC.

[구 IM-04] Turbulent Properties in Two Molecular Clouds: Orion A and ρ Ophiuchus

Hyeong-Sik Yun[1], Jeong-Eun Lee[1], Yunhee Choi[1], Seokho Lee[1], Minho Choi[2], Hyunwoo Kang[2], Ken'ichi Tatematsu[3], Stella S. R. Offner[4], Brandt A. L. Gaches[4], Mark H. Heyer[4], Neal J. Evans II[5], Yao-Lun Yang[5]
[1]Kyung Hee University, Republic of Korea, [2]Korea Astronomy and Space Science Institute, Republic of Korea, [3]National Astronomical Observatory of Japan, Japan, [4]University of Massachusetts, Amherst, USA, [5]University of Texas, Austin, USA

Molecular clouds are the sites of stellar birth, and conditions within the clouds control the mode and tempo of star formation. In particular, turbulence largely determines the density and velocity fields, and can affect the gas kinetic temperature as it decays via shocks. However, despite its central role in star formation and many years of study, the properties of turbulence remain poorly understood. As a part of the TRAO key science program, "Mapping turbulent properties of star-forming molecular clouds down to the sonic scale (PI: Jeong-Eun Lee)", we mapped the northern region of the Orion A molecular cloud and the L1688 region of the ρ Ophiuchus molecular cloud in 2 sets of lines (13CO 1-0/C18O 1-0 and HCN 1-0/and HCO+ 1-0) using the Taeduk Radio Astronomy Observatory (TRAO) 14-m telescope. We analyze these maps using a python package 'Turbustat', a toolkit which contains 16 different turbulent statistics. We will present the preliminary results of our TRAO observations and various turbulence statistical analyses.

[구 IM-05] Escape of Lyβfrom Hot and Optically Thick Media

Seok-Jun Chang and Hee-Won Lee
Sejong University

Symbiotic stars and quasars show strong far UV resonance doublets including O VI 1032 and 1038, which are known to be major coolants of astrophysical plasma with high temperature $T > 10^5$ K. We investigate the transfer of Hα and Lyβ in an emission nebula of temperature $T \sim 10^5$, where n=2 population is significant. Line photons of Hα and Lyβ are transferred in the medium through spatial and frequency diffusion altering their identity according to the branching ratios. We adopt a Monte Carlo technique to describe the transfer of Hα and Lyβ in an emission nebula with a uniform density and a simple geometrical figure. We find that the temperature of the emission nebula is the major controlling parameter to produce a nonnegligible flux of Lyβ. In particular, when T exceeds 10^5 K the number flux ratio may reach ~ 25% with line center optical depth of a few. We discuss the formation of broad Hα wings from Raman scattering of Lyβ emergent from a hot emission nebula.

[구 IM-06] Early Dynamical Evolution of Star Clusters Near the Galactic Centre

So-Myoung Park[1], Simon P. Goodwin[2], Sungsoo S. Kim[1,3]
[1]School of Space Research, Kyung Hee University, [2]Department of Physics and Astronomy, University of Sheffield, [3]Department of Astronomy and Space Science, Kyung Hee University

현재 관측되는 대부분의 성단들은 구형의 구조를 보이는 반면, 별탄생 지역은 구형의 구조와는 다른 프랙털 (fractal) 구조를 보이고 있다. 본 연구에서는 초기에 프랙털 구조를 가지는 성단이 우리 은하 중심부근에서 어떻게 진화하는지 N-body 시뮬레이션을 이용해 연구하였다. 그 결과, 프랙털 구조의 성단이 우리 은하 중심부근의 강력한 조석력장 내에서 살아남기 위해서는 초기 밀도가 높아야 한다는 것을 발견하였다. 성단의 초기 밀도가 높기 때문에 프랙털 구조의 성단은 빠른 역학적 진화를 보이며 구형의 성단으로 진화한다. 플러머 (Plummer) 구조의 성단도 프랙털 구조의 성단과 같이 초기 밀도가 높아야 살아남지만 프랙털 구조보다는 역학적인 진화가 느렸다. 이러한 결과들은 Arches 성단처럼 우리 은하 중심부근에서 관측되는 성단들의 형성과 진화에 제약조건을 줄 수 있을 것으로 예상된다.

천문관측기술

[구 AT-01] New Radome Installation for the