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Based on the 850 μm dust continuum data from James Clerk Maxwell Telescope (JCMT)/SCUBA-2, we compare overall properties of Planck Galactic Cold Clumps (PGCCs) in the λ Orionis cloud with PGCCs in other molecular clouds, Orion A and Orion B. The Orion A and Orion B clouds are well known active star-forming region, while, λ Orionis cloud has a different environment associating with prominent OB associations and a giant H II region. PGCCs in the λ Orionis cloud have higher dust temperatures (Td～16.08 K) and lower values of dust emissivity (β～1.65) than Orion A and Orion B clouds. In addition, we found the lowest detection rate (16 %, 8 out of 50) of PGCCs at 850 μm in the λ Orionis cloud while among three regions; Orion A and Orion B clouds show much higher detection rates of ～ 76 % (23 out of 30) and 56 % (9 out of 16), respectively. The detected 8 PGCCs in the λ Orionis cloud have substructures and we identified 15 cores. The cores also show much lower median values of size (～0.08 pc), column density (～), number density (～), and mass (～) compared with other cores in the Orion A and Orion B clouds. These core properties in the λ Orionis cloud can be attributed to the compression and external heating by the nearby H II region, which may prevent the PGCCs from forming gravitationally bound structures and eventually disperse them. These results well present the negative stellar feedback to core formation.

[구 IM-03] Upgraded TRAO and its performance

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TRAO has been newly equipped with a multi-beam receiver system, 16 pixel MMIC preamplifiers in a 4x4 array, a FFT spectrometer, and new control computer systems. In our new receiver systems one can make simultaneous observations with two molecular lines maximum 15 GHz apart with a spectral band width of 60 MHz. Typical system temperatures are about 160 – 200 K at 86 ~ 100 KHz and 400 – 500 K at 115 GHz in the dry weather. The new systems using On-The-Fly mode were found to be very efficient in making quick and sensitive maps of large clouds with a high velocity resolution (~0.04 km/s at 100 GHz). TRAO now calls for proposals for 2016 and 2017 observing season for everybody. In the talk we will introduce the current status of TRAO upgrade and its scientific preliminary results.

[구 IM-04] Filaments and Dense Cores in Perseus Molecular Cloud

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How dense cores and filaments in molecular clouds form is one of key questions in star formation. To challenge this issue we started to make a systematic mapping survey of nearby molecular clouds in various environments with TRAO 14m telescope equipped with 16 beam array, in high (N_2H^+, HCO^+ 1-0) and low ($C^{18}O$, ^{13}CO 1-0) density tracers (TRAO Multi-beam Legacy Survey of Nearby Filamentary Molecular Clouds, PI: C. W. Lee). We pursue to dynamically and chemically understand how filaments, dense cores, and stars form under different environments.
We have performed On-The-Fly (OTF) mapping observations toward L1251, southern part of Perseus molecular cloud, and Serpens main molecular cloud from January to May, 2016. In total, ~3.5 square degree area map of ^{13}CO and $C^{18}O$ was simultaneously obtained with S/N of >10 in a velocity resolution of ~0.2 km/s. Dense core regions of ~1.7 square degree area where $C^{18}O$ 1-0 line is strongly detected were also mapped in N_2H^+ 1-0 and HCO^+ 1-0. The L1251 and Perseus MC are known to be low- to intermediate-mass star-forming clouds, while the Serpens MC is an active low-mass star-forming cloud. The observed molecular filaments will help to understand how the filaments, cores and eventually stars form in a low- and/or intermediate-mass star-forming environment. In this talk, I'll give a brief report on the observation and show preliminary results of Perseus MC.

[박 IM-05] A Search for Very Low-luminosity Objects in Gould Belt Clouds

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