core cluster of OB stars. Because of its proximity (d = 500 kpc), we can resolve the star-forming regions on parsec scales (1 arcsec = 2.4 pc). Using the high-resolution (R = 45,000) near-infrared spectrograph, IGRINS, we observed molecular hydrogen emission lines from photo-dissociation regions (PDRs) and Brγ emission line from ionized regions. In this presentation, we compare our data PDR models in order to derive the density distribution of the molecular clouds on parsec scales and to estimate the total mass of the clouds.

[포 IM-03] Radiative Transfer Modeling of EC 53: An Episodically Accreting Class I Young Stellar Object

Giseon Baek[1], Benjamin A. MacFarlane[2], Jeong-Eun Lee[1], Dimitris Stamatellos[2], Gregory Herczeg[3], Doug Johnstone[4], Huei-Ru Vivien Chen[5], Sung-Ju Kang[6]
[1]School of Space Research and Institute of Natural Sciences, Kyung Hee University, 1732 Deogyeong-daero, Giheung-gu, Yongin-si, Gyeonggi-do 446-701, Korea
[2]Jeremiah Horrocks Institute for Mathematics, Physics and Astronomy, University of Central Lancashire, Preston, PR1 2HE, UK
[3]Kavli Institute for Astronomy and Astrophysics, Peking University, Yiheyuan
[4]NRC Herzberg Astronomy and Astrophysics, 5071 West Saanich Rd, Victoria, BC, V9E 2E7, Canada
[5]Department of Physics and Institute of Astronomy, National Tsing Hua University, Taiwan
[6]Korea Astronomy and Space Science Institute, 776 Daedeokdae-ro, Yuseong-gu, Daejeon 34055, Republic of Korea

We present 2-dimensional continuum radiative transfer modeling for EC53. EC 53 is a Class I YSO, which was brightened at 850 μm by a factor of 1.5. This luminosity variation was revealed by the JCMT Transient Survey. The increase in brightness is likely related to the enhanced accretion. We aim to investigate how much increase of protostellar luminosity causes the observed brightness increase at 850 μm. Thus we modeled the SED of EC 53 both in the quiescence and (small scale) outburst phases, with and without the external heating from the interstellar radiation field (ISRF). We found that the internal protostellar luminosity should increase more to fit the observed flux enhancement if the ISRF is considered in the model.

[포 IM-04] Results of KVN and ALMA observations toward WX Psc

Youngjoo Yun[1], Se-Hyung Cho[1], Dong-Hwan Yoon[1,2], Haneul Yang[1,2]
[1]Korea Astronomy and Space Science Institute, [2]Seoul National University

We present the results of KVN and ALMA observations toward WX Psc (IRC+10011) which is a long-period variable OH/IR star. The SiO masers of v=1 and v=2, J=5-4, and the SiO thermal emission of v=0, J=5-4 were observed together with H2O v2=1 (232.6 GHz) and continuum emission at ALMA Band 6 in October 2017 (Cycle 5). This observation aims to investigate the physical association between the inner and outer parts of the circumstellar envelope (CSE) swept by the stellar winds, which is very crucial to understand the asymmetric outward motions developed during the evolutionary phases from the asymptotic giant branch (AGB) stars to the planetary nebulae (PNe). The strong SiO maser features and thermal emissions are detected together with the continuum emission in ALMA observation, which imply the elongated morphology of the CSE of WX Psc. While the spatial resolution of about 20 mas in ALMA observation cannot clearly resolve the detailed characteristics of the inner part of the CSE, the Korean VLBI Network (KVN) observations show the spatial distributions of the v=1 J=1-0, J=2-1, J=3-2 SiO masers emitted from the inner regions of CSE, which are the complementary to the ALMA results. Therefore, we expect these results reveal how the bipolar features of the 22 GHz H2O maser are connected to the innermost region of CSE through the dust condensation region, which is closely related to the enormous mass ejection of the evolved stars.

[포 IM-05] A disk around a massive young stellar object (MYSO) revealed by the high resolution NIR spectroscopy

In Kang, Jeong-Eun Lee, NehaSharma, Sun kyung Park, Sung-Yong Yoon
School of Space Research, Kyung Hee University, Korea

Massive stars play an important role in terms of their feedback, but their formation process is poorly understood. Direct observational evidence for the formation of massive stars through accretion disks is rare. Hence the detection of disks in massive young stellar objects (MYSOs), if any, could be important to constrain the formation process of massive stars. The inner gaseous disk can be observed by the high-resolution near-infrared spectroscopy. We observed a MYSO, Min 2-62, using IGRINS and detected a double peak feature, which could be an evidence of a rotating disk, in the Bracket and Pfund series lines. We report the preliminary observational results of Min 2-62 with IGRINS.

[포 IM-06] 2 – 5 μm Spectroscopy of Red