calculated collimation-corrected luminosities and opening angles using the observed light curves taken from a database of Swift/BAT, XRT. We expect to increase its significance level by expanding a sample size compared with those previously analyzed.

성간물질/별생성/우리은하

[포 IM-01] Study on the global distribution of far-ultraviolet emission in our Galaxy

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FIMS/SPEAR is a dual-channel far-ultraviolet imaging spectrograph on board the Korean microsatellite STSAT-1, which was launched on 2003 September 27. The primary mission goal of FIMS was to conduct a survey of diffuse far UV emissions in our Galaxy. For this purpose, FIMS completed a survey of about 84% of the sky during its operation of a year and a half. The present study aims to analyze this survey data made in the far UV wavelengths to understand the global evolution of our Galaxy. The far UV wavelength band is known to contain important cooling lines of hot gas: hence, the study will show how the hot gas in our Galaxy, produced by stellar winds and supernova explosion, evolves globally to cool down and become mixed with ambient cooler medium. One of the main findings from previous analyses of the FIMS data is that molecular hydrogen exists ubiquitously in our Galaxy. This discovery leads to another important scientific question: how is molecular hydrogen distributed in our Galaxy and how does it affect globally the evolution of our Galaxy as a cold component? Hence, the present study will cover both the hot and cold components of the ISM, which will also provide the opportunity to investigate the interactions between the two.

[포 IM-02] SgrA* 22GHz KaVA(+TAK) observation and its Amplitude Calibration

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SgrA* located in the center of the Milky Way is of great interest to understand the physics of supermassive black hole(SMBH) and the interaction of the G2 cloud around SgrA* with the accretion flow which was expected since 2013. In order to seize this rare opportunity, KVN and VERA Array (so called, KaVA) has started an intensive monitoring program of SgrA* at 22/43 GHz where scatter broadening is reduced compared to lower frequency VLBI observations. We present the results of KaVA SgrA* observation together with Takahagi (32m) and Yamaguchi (32m) telescopes at 22 GHz on March 24, 2013. We have tested both a standard amplitude calibration methods using the Tsys and antenna gain information and a template amplitude calibration method which uses a peak of H2O maser line of nearby maser source (SgrB2), and found that the latter method is useful when an accuracy of Tsys measurement or antenna gain of a telescope is poor. In our comparison, the difference between the two methods is around 20% (~5% for the KVN and ~15% for the VERA when the elevation is above 20°). We also imaged SgrA* with a total flux of ~0.7 Jy at 22GHz, and fitted an elliptical Gaussian model which has a size of ~2.5mas for major axis and ~1.7mas for minor axis, respectively.

[포 IM-03] HCO+ Observations toward Compact Radio Continuum Sources Using the KVN 21-m Telescopes to Trace Dark Molecular Gas

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It has been known that there is “dark gas” invisible either in 21-cm HI or 2.6-mm CO emission which are general tracers of atomic and molecular gas, respectively. Many researchers consider that the dark gas is “Dark Molecular Gas (DMG)” composed of CO-free H_2 in the intermediate zone between atomic and full-fledged molecular gas and that HCO+ and OH molecules are good tracers of the DMG since they can form in much lower H_2 column densities where CO does not. We have carried out HCO+ J=1-0 absorption observations toward nine bright extragalactic radio

continuum sources using the KVN 21-m telescopes as single dishes. We detected HCO+ absorption lines toward two sources. We derive HCO+ and H_2 column densities or their limits, and discuss the implications of our results.

[포 IM-04] CO Observations of H Ⅱ Regions Sh 254-258

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The molecular clouds associated with bright optical H Ⅱ regions Sh 254-258 are studied with the TRAO CO observations and with the WISE near-infrared emission. Based on the morphology of the clouds and the basic physical parameters derived with the LTE analysis, Pieces of evidences for physical interactions with its surroundings are investigated.

[포 IM-05] Molecular environments of a Planck Cold Clump: G108.8-00.8

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We present preliminary results from a series of observations toward G108.8-00.8, which is one of Planck Cold Clumps and a promising candidate of massive prestellar cores. In the integrated intensity map of SCUBA 850 micron dust continuum emission, highly fragmented structures appear. These are distributed along one long filamentary structure seen in the CO 1-0 and 13CO 1-0 integrated intensity maps obtained with the PMO 13.7 m telescope. The northern part of the filament is divided into two parts, as seen in the CO 2-1, 13CO 2-1, and C18O 2-1 integrated intensity maps obtained with the CSO 10 m telescope. The observations of HCO+ 1-0, N2H+ 1-0, and HCN 1-0 with the IRAM 30 m telescope focus on the northern part of the CSO maps, which show a head-tail structure. NH3 (1,1) also shows similar distribution with IRAM maps. The depletion factors, derived by the comparison between the dust continuum and C18O 2-1 emission, varies from 1.5 to 6 over the region, suggesting different evolutionary status of each component. To study the chemical and physical environments of G108.8-00.8, more detailed analysis is in progress.

[포 IM-06] Blue excesses in different evolutionary stages of massive star-forming regions

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We analyzed both HCN J=1-0 and HNC J=1-0 line profiles to study the inflow motions in different evolutionary stages of massive star formation; infrared dark clouds (IRDCs), high-mass protostellar object (HMPOs), and ultra-compact HII regions (UCHIIs). The infall asymmetry in HCN spectra seems to be prevalent throughout all the three evolutionary phases, with IRDCs showing the largest excess in blue profile. In the case of HNC spectra, the prevalence of blue sources does not appear, excepting for IRDCs. We suggest that this line is not appropriate to trace infall motion in evolved stages of massive star formation because of an astrochemical effect. This result spotlights the importance of considering chemistry in dynamical study in star-forming regions. The fact that the IRDCs show the highest blue excess in both infall tracers indicates that the most active infall occurs in the early phase of star formation, i.e., the IRDC phase rather than in the later phases. However, the UCHIIs is likely still accreting matters. We also found that the absorption dips of the HNC spectra in all blue sources are red--shifted relative to their central velocities. These red-shifted absorption dips may indicate the observational signature of overall collapse although observations with better resolutions are needed to examine this feature more in detail.

[포 IM-07] 광대역 TRAO CO 관측: 분자운 충돌

Kim, Youngsik[1,2], Kim, Kwang. Tae[1] and Lee, Youngung[2]