whether the origin of the [P II] knots are SN ejecta or CSM/ISM. For this purpose we have built a family of radiative shock with self-consistent pre-ionization using MAPPINGS 5.1.18, with shock velocities in the range of 100 to 475 km/s. We will compare the observed and modeled line fluxes for different depletion factors.

[포 IM-02] Modeling Grain Rotational Disruption by Radiative Torques and Extinction of Active Galactic Nuclei

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Extinction curves observed toward individual Active Galactic Nuclei (AGN) usually show a steep rise toward Far-Ultraviolet (FUV) wavelengths and can be described by the Small Magellanic Cloud (SMC)-like dust model. This feature suggests the dominance of small dust grains of size a < 0.1 μm in the local environment of AGN, but the origin of such small grains is unclear. In this paper, we aim to explain this observed feature by applying the RAdiative Torque Disruption (RATD) to model the extinction of AGN radiation from FUV to Mid-Infrared (MIR) wavelengths. We find that in the intense radiation field of AGN, large composite grains of size a > 0.1 μm are significantly disrupted to smaller sizes by RATD up to dRATD > 100 pc in the polar direction and dRATD ~ 10 pc in the torus region.

Consequently, optical-MIR extinction decreases, whereas FUV-near-Ultraviolet extinction increases, producing a steep far-UV rise extinction curve. The resulting total-to selective visual extinction ratio thus significantly drops to RV < 3.1 with decreasing distances to AGN center due to the enhancement of small grains. The dependence of RV with the efficiency of RATD will help us to study the dust properties in the AGN environment via photometric observations. In addition, we suggest that the combination of the strength between RATD and other dust destruction mechanisms that are responsible for destroying very small grains of a <0.05 μm is the key for explaining the dichotomy observed “SMC” and “gray” extinction curve toward many AGN.

[포 IM-03] Catalog of the Paα-emitting Sources observed in the Carina Region

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We list up the Paα-emitting sources observed in the Carina Region (l = 276°-296°) using the MIRIS Paα Galactic Plane Survey data. A total of 201 sources are cataloged. Out of them, 118 sources are coincident with those in the WISE H II region catalog. 52 H II region candidates are newly confirmed as definite H II regions by detecting the Paα recombination lines. For the remaining 83 sources, we search the corresponding objects in the SIMBAD database. 26 point-like sources are associated with planetary nebulae or emission-line stars (such as Wolf-Rayet and Blue supergiant stars). Also, we carry out aperture photometry to measure Paα fluxes for the sources that show circular features without overlapping with other bright sources. For the whole Galactic Plane, the complete Paα-emitting source catalog is in progress.

[포 IM-04] Tracing history of the episodic accretion process in protostars

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Low-mass stars form by the gravitational collapse of dense molecular cores. Observations and theories of low-mass protostars both suggest that accretion bursts happen in timescales of ~100 years with high accretion rates, so called episodic accretion. One mechanism that triggers accretion bursts is infalling fragments from the outer disk. Such fragmentation happens when the disk is massive enough, preferentially activated during the embedded phase of star formation (Class 0 and I). Most observations and models focus on the gas structure of the protostars undergoing episodic accretion. However, the dust and ice composition are poorly understood, but crucial to the chemical evolution through thermal and energetic processing via accretion burst. During the burst phase, the surrounding material is heated up, and the chemical compositions of gas and ice in the disk and envelope are altered by sublimation of icy molecules from grain surfaces. Such alterations leave imprints in the ice composition even when the temperature returns to the pre-burst level. Thus, chemical compositions of gas and ice retain the history of past bursts. Infrared spectral