6886 and NGC 6881 which indicates the existence of atomic hydrogen components. Considering sharply increasing cross-section of hydrogen atom near the resonance, Raman-scattered He II features are a useful diagnostic tool to investigate the distribution and kinematics of H I region in planetary nebulae. The high-resolution spectroscopic observation was carried out using BOES installed on the 1.8 m telescope of BOAO. We estimate the column density of H I region and its expansion velocity using our grid-based Monte-Carlo radiative transfer code. We assume that the H I region is uniformly distributed in spherical shell geometry with an opening angle and expands with constant speed. Our best-fit model is shown with the column density NHI = 3×10^{20} cm^{-2} and expansion speed vexp = 25 km s^{-1} with the opening angle ~ 25° for NGC 6886, and NHI = 4×10^{20} cm^{-2} and v_{exp} = 30 km s^{-1} with the opening angle ~ 35° for NGC 6881. We present brief discussions on the late-stage of evolution of stars with mass > 3 $M_\odot$.

[구 SA-03] The kinematic properties of stellar groups in the Rosette Nebula: its implication on their formation process

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The Rosette Nebula is the most actively star-forming region in the Monoceros OB2 association. This region hosts more than three stellar groups, including the most populous group NGC 2244 at the center of the region and the smaller stellar groups around the border of the H II bubble. To trace their formation process, we investigate the kinematic properties of these groups using the Gaia astrometric data and high-resolution spectra taken from observation with Hectochelle on MMT. The proper motions of stars in NGC 2244 show a pattern of radial expansion. The signature of cluster rotation is also detected from their radial velocities. On the other hand, the small groups appear to be physically associated with some clouds at the ridge of the H II region. Among them, the group near the eastern pillar-like gas structure shows the signature of feedback-driven star formation. In this presentation, we will further discuss the formation process and dynamical evolution of the stellar groups in the Rosette Nebula, based on the observation and results of N-body simulations.

[구 SA-04] Nature of Fe II fluorescent lines in Luminous Blue Variables

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Luminous blue variables (LBVs) are massive evolved stars that show unpredictable photometric and spectral variation. It is generally assumed that they undergo one or more of large eruptions. We have obtained high dispersion NIR spectra of several LBVs with Immersion GRating INfrared Spectrometer (IGRINS). One notable feature in their IGRINS spectra is the existence of broad lines (~ a few hundred km/s) with unusual boxy profile. They are fluorescent lines of Fe II by Lyman α photons in the stellar wind. However, modeling of these lines with radiative transfer code CMFGEN predicts much weaker line strength. We propose that incorporating broadening of Lyman α line by scattering processes in dense wind can enhance the Fe II fluorescent lines. We further discuss how these Fe II fluorescent lines can be used to characterize massive LBV wind.

[구 SA-05] Development of a Markov Chain Monte Carlo parameter estimation pipeline for compact binary coalescences with KAGRA GW detector (카그라 마코브 체인 몬테칼로 모수 추정 파이프라인 분석 개발과 밀집 쌍성의 물리량 측정)

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We present the status of the development of a Markov Chain Monte Carlo (MCMC) parameter estimation (PE) pipeline for compact binary coalescences (CBCs) with the Japanese KAGRA gravitational-wave (GW) detector. The pipeline is included in the KAGRA Algorithm Library (KAGALI). Basic functionalities are benchmarked from the LIGO Algorithm Library (LALSuite) but the KAGRA MCMC PE pipeline will provide a simpler, memory-efficient pipeline to estimate physical parameters from gravitational waves emitted from compact binaries consisting of black holes or neutron stars. Applying inspiral-merge-ringdown and inspiral waveforms, we performed simulations