

[P-004/IM-3] The Optical Spectrum of the Planetary Nebulae NGC 6803 and NGC 6881

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With the Hamilton Echelle Spectrograph (HES) at the Lick observatory, we secured spectral emission lines of two Galactic planetary nebulae, NGC 6803 and NGC 6881, in the 3700Å to 10050Å wavelength range. Using the strong emission lines of H I, He I, He II, C III], [N II], [O II], [O III], [Ne III], [Ar III], [Ar IV], [C III], [C IV], [C III], [Fe II], [S II], and [S III], the physical condition of the nebulae were obtained and the line profiles were investigated. The diagnostic lines of NGC 6803 and NGC 6881 indicate that the nebulae are of high excitation, i.e. $T_e \sim 9,000 - 11,000$ K, $N_e \sim 2000, 7000, 25,000 \text{ cm}^{-3}$ (NGC 6803) and $T_e \sim 10,000 - 13,000$ K, $N_e \sim 6300, 16000 \text{ cm}^{-3}$ (NGC 6881). Using the photoionization modelling procedure, the chemical abundances were derived. We investigated the nebular peculiar characteristics appear relating to their origin borne near the Galactic plane. NGC 6803 could have been evolved from a middle massive progenitor of 2 - 3 M_{\odot} , while NGC 6881 might be evolved from a relatively high massive progenitor of 3-7 M_{\odot} .

[P-005/IM-4] H₂ fluorescent emission and PDR modeling in the OES region

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The far-ultraviolet (FUV) H₂ emission spectra of Orion Eridanus Superbubble (OES) is hereby presented. The OES seems to be consists of multiple phase through the detection of highly-ionized gas and pervasive neutral hydrogen. The former is traced by hot gas while the latter is traced by cold medium. A spectral image made with H₂ fluorescent emission show that the spatial distribution of hydrogen molecule is well-correlated with the dust map. The model spectra was taken from a photodissociation region (PDR) radiation code which find a best suitable parameter such as hydrogen density and intensity of the radiation field. In this process, the hydrogen density and gas temperature were also estimated. The data were obtained with the Far-Ultraviolet Imaging Spectrograph (FIMS) and the whole data handling were followed by previous FIMS analysis.