[구IM-05] Dust-scattered Hα halos around H II regions: On the origins of the diffuse Hα emission

Kwang-Il Seon
Korea Astronomy and Space Science Institute

It is known that the diffuse Hα halos around bright H II regions are more extended than the dust-scattered halos around point sources and the line ratios [S II] λ6716/Hα and [N II] λ6583/Hα observed outside of bright H II regions are generally higher than those in H II regions. These observational facts have been regarded as evidence against the dust-scattering origin of the diffuse Hα emission and the effect of dust-scattering has been neglected in studying the diffuse Hα emission. In this paper, we find, however, that dust-scattered halos of H II regions should be more extended than those of point sources and is in good agreement with the observed Hα profiles around H II regions. We also found that the observed line ratios [S II]/Hα, [N II]/Hα, and He I λ5876/Hα in the diffuse regions can be well reproduced with the dust-scattered halos around H II regions which are photoionized by late O- and/or early B-type stars in the interstellar medium with the abundances close to those of the warm neutral medium. Therefore, we conclude that the diffuse Hα emission may originate mostly from the dust-scattering.

[구IM-06] [Fe II] 1.64 μm images of Jets and Outflows from Young Stellar Objects in the Carina Nebula

Jong-Ho Shinn[1], Tae-Soo Pyo[2], Jae-Joon Lee[1], Ho-Gyu Lee[3], Bon-Chul Koo[4], Hwankyung Sung[5], Dae-Sik Moon[6], Jaemann Kyeong[1], Byeong-Gon Park[1]
[1]Korea Astronomy and Space Science Institute, [2]National Astronomical Observatory of Japan, [3]University of Tokyo, [4]Seoul National University, [5]Sejong University, [6]University of Toronto

We present [Fe II] 1.64 μm imaging observations for jets and outflows from young stellar objects over the northern part (~24′ x45′) of the Carina Nebula, a typical evolved massive star forming region. The observations were performed with IRIS2 of Anglo-Autralian Telescope and the seeing was ~1.5″. Several jets and outflows features are detected at seven different regions, and one new Herbig-Haro Object is identified. The [Fe II] features have knotty and elongated shapes, and distribute around the triangular area formed by the star clusters Tr 14, Tr 15, and Tr 16, which contain many massive stars. The [Fe II] feature shows a highest detection rate (3.2 %) for the earliest stage YSOs, and the rate decreases as the stage evolves. The low detection rate (1.5 %) of [Fe II] features from the numerous YSOs seem to be related with the severe radiation environment of the Carina Nebula. The outflow rate shows reasonable relations with the physical parameters of the corresponding YSOs－derived from the SED fitting－such as the accretion luminosity, the stellar mass, the stellar age, the disk accretion rate, etc.