[구IM-05] Far Ultraviolet Observations of the Spica Nebula and the Interaction Zone

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We report the results of our analysis of far ultraviolet (FUV) observations made for the broad region around the α Vir (Spica) including the interaction zone of the Loop I and the Local Bubble. We employed the datasets of the GALEX and the FIMS, which made observations at similar FUV wavelengths. First, we noted that the GALEX image was enhanced in the southern region where the interaction zone exists. We attribute this enhanced FUV emission to dust scattering of the stellar photons, mostly from the background field stars with small contributions from the central star Spica. While the region is optically thin in general, the FUV intensity did not correlate well with the dust extinction level, indicating that the local radiation field has significant fluctuations. On the other hand, the GALEX FUV intensity well with the Hα intensity as well as the dust extinction level in the northern part. In fact, the neutral hydrogen column density correlated very well with the dust extinction level throughout the whole region in consideration. The relationship between the neutral hydrogen column density and the color excess was estimated to be ~7×10^{21}atoms cm^{-2}, which is a little higher than the previous observations made for a diffuse interstellar medium. The spectral analyses of the FIMS observations showed the enhanced C IV emission throughout the whole region, indicating that the C IV emission arises by the interaction of the hot gases with the shell boundaries. A simple model showed that a large portion of the C IV emission comes from the Loop I side of the interaction zone, compared to the Local Bubble side. The FIMS spectrum also showed indications of the molecular hydrogen fluorescence lines for the interaction zone.

[포IM-06] FUV Spectral Images of the Vela Supernova Remnant: Comparisons with X-ray and Hα images

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We updated the far-ultraviolet (FUV) spectral images of the entire Vela supernova remnant (SNR) using newly processed FIMS/SPEAR data. In the present study, we compare the newly produced FUV images with the X-ray and Hα images, and examine how the Vela SNR evolves and interacts with the ambient medium on a global scale. The comparison with X-ray images has revealed a FUV filamentary feature corresponding with the boundary of the northeast-southwest asymmetry of the X-ray shell. The relatively low O IV] λ1404 to O III] λλ1661, 1666 ratio estimated on the FUV filament is compatible with the previous proposal that the observed asymmetry of the Vela SNR could be due to the γ2 Velorum stellar wind bubble (SWB). The southwest FUV features surrounding a faint extended X-ray region are characterized as the region where the Vela SNR is interacting slightly stronger with ambient mediums within the dim X-ray southwest section. From a comparison with the Hα image, we identify a ring-like Hα feature overlapped with an extended hot X-ray feature of similar size and two local peaks of C IV λλ1548, 1551 emission. Their morphologies are consistent with the expected shape when the Hα ring is in direct contact with the near or far side of the Vela SNR. We suggest that the B3V-type star HD 76161 found at the center of the Hα ring would be the exciting source of the H II region.