[구IM-09] AKARI near-infrared spectral observations on the shocked H2 gas of a supernova remnant IC 443

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IC 443 is famous for its interaction with nearby molecular clouds and intense H2 emission lines in infrared. Therefore, it has been studied extensively for the understanding of molecular shocks. We observed H2 mission lines toward the shock-cloud interaction regions of IC 443, known as clumps B, C, and G. The observations were performed with the InfraRed Camera (IRC) onboard a satellite AKARI over 2.5-5.0 um, where previous space observations, e.g. Infrared Space Observatory (ISO) and Spitzer, do not cover. Our AKARI observations provide spectra of sequential pure-rotational and ro-vibrational H2 emission lines. For the clumps C and G, combining with previous mid-infrared observational results, we found that the H2 level populations show a significant separation between v=0 and v=1 levels; v=1 levels are under-populated than v=0 levels, therefore, the population cannot be described by two temperature LTE model, as many people have analyzed for the shocked H2 gas. We also applied the thermal admixture model, dN(H2; T) ~ T^(-b) dT , with varying ortho-to-para ratios according to the temperature, to describe the level population, and obtained plausible ranges of the H2 gas density and power-law index b.

[구IM-10] FUV Images and Physical Properties of the OES region

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The far-ultraviolet (FUV) H2 and C IV emission images and spectra of Orion Eridanus Superbubble (OES) is hereby presented. The OES seems to 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 shows 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, gas temperature and incident uv intensity of the radiation field. C IV emission is caused by intermediate temperature ISM about 10^4.5 K ~ 10^6 K. Therefore we could get more clear evidence to reveal the structure of OES. Feature of spectra for the each sub region is also presented and discussed. The data were obtained with the Far-Ultraviolet Imaging Spectrograph (FIMS) and the whole data handling were followed by previous FIMS analysis.