[IM-04] AKARI near-infrared spectra toward shock-cloud interaction regions of two supernova remnants HB21 and IC443

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We present near-infrared (2.5-5.0 mm) spectra toward shock-cloud interaction regions of two supernova remnants, HB21 and IC443. The spectra were observed with the AKARI satellite during the post-Helium phase, and revealed several H2 emission lines. In case of HB21, we could obtain the true ortho-to-para ratio from these near-infrared spectra, which was assumed to be 3.0 during the previous analysis on the mid-infrared images obtained with the Infrared Camera onboard AKARI. With this true ortho-to-para ratio, we re-characterized the excitation state of shocked H2 gas observed in mid-infrared images with the power-law admixture model (Shinn et al. 2009), and compared its prediction for near-infrared spectra with the observed spectra. For IC443, we derived the excitation state of shocked H2 gas, and compared with previous observations. We discussed the obtained results with previously proposed pictures on the shocked H2 gas.

[IM-05] Supernova Remnants in the Large Magellanic Cloud with AKARI Observation

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We present an infrared study of supernova remnants (SNRs) using the AKARI IRC Survey of the Large Magellanic Cloud (LMC) as well as a preliminary result of follow-up near-infrared spectroscopic observations by AKARI. The AKARI LMC survey covered about 10 square-degree of the LMC including 21 SNRs, a half of the known SNRs. Among those, we found that 8 SNRs have distinguishable infrared emission in NIR and/or MIR bands. We explore the statistical properties of their infrared colors and discuss the origin of the infrared emission. For the further analysis, we have performed NIR spectroscopic observations on four NIR bright LMC SNRs during the AKARI warm phase. We examined their NIR spectra and identified strong hydrogen recombination lines with several H2 molecular lines in most SNRs. We discuss their implications for the SNRs with their environment and the nature of the IR emission.