[구IM-03] Near-IR study of Nova V2468 Cyg

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We present near-infrared spectroscopic and photometric observations of the nova V2468 Cyg taken from 2008 March 14 till 2008 November 11 following its outburst on 2008 March 7. The JHK spectra of the nova have been taken from the Mount Abu Infrared Observatory using the Near-Infrared Imager/Spectrometer. The early spectra are dominated by strong H I lines from the Brackett and Paschen series, Fe II, O I and C I lines, typical of Fe II type novae but after 46 days from outburst there is significant reduction in the strength of the C I lines and the spectra are dominated by He I lines. The FWHM of the Pa-beta and Br-gamma lines change from 2200-2300 km s-1 to 1700-1800 km s-1 after 12 days from outburst. Three additional small amplitude outbursts are seen near 110, 185 and 240 days in the V band light curve after the discovery. The upper limit for the ejecta mass for V2468 Cyg is estimated to be 5.2 × 10-6 Msun.

[구IM-04] Improved dynamical modeling of the Arches cluster

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The Arches cluster is one of the compact, young, massive star clusters near the center of our galaxy. Since it is located only ~30 pc away in projection from the galactic center (GC), the cluster is an excellent target for studying the effects of star forming environment on, for example, the initial mass function under the extreme condition of GC. To estimate the initial condition of the Arches cluster, we compare our calculation results from the anisotropic Fokker-Planck method with the most recent observational data sets for the surface density and velocity dispersion profiles and the present-day mass function.