[구GC-17] Initial Size Distribution of the Milky Way Globular Clusters

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Unlike the initial mass function,the initial size distribution of globular cluster (GC) systems is not well known. We calculate the evolution of the mass function (MF), radial distribution (RD), and size distribution (SD) of the Galactic GC system. By comparing the results from this calculation and the present-day MF, RD, and SD of the Galactic GC system, we infer the initial SD of the GC system. We find that a Gaussian distribution of the half-mass radius and a Gaussian distribution of the half-mass to Jacobi radius ratio are the best-fit initial SDs of the Galactic GC system.

[구GC-18] Dust Properties in Afterglow of GRB071025 at z~5: Evidence for Supernovae-produced Dust in the Early Universe

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It is crucial to understand the dust properties in the early universe since they provide important clues about how the early cosmic star formation should be interpreted in the presence of dust extinction. GRB 071025 is an unusually red GRB that occured at high redshift, offering an unique opportunity to study the dust properties in the early universe. We investigate the extinction properties of GRB 071025 through the analysis of RIJHK data obtained with the 1-m telescope at Mt. Lemmon Optical Astronomy Observatory (LOAO) and Simultaneous Quad Infrared Imaging Device (SQIID) on the Kitt-Peak Mayall 4-m telescope. Our dataset is independent from that in a previous work (Perley et al. 2010) where a small systematic photometric errors could complicate the interpretation. After determining the temporal power law exponent with five I-band frames from LOAO, we construct a multi-band monochromatic SED of the GRB afterglow. By using various extinction laws, we find that the SED is best fitted with models that incorporate SNe II dust and derive a photometric redshift of 4.99(+0.12/-0.03). Our results strongly support the prior claim that dusts in GRB 071025 originate mainly from supernovae, implying SNe II predominantly contributed to the dust enrichment in the early universe (z ~ 5).