

**[ㄷGC-08] IAn Automatic Measurement Method for the Galaxy Disk Warp and its Application to SDSS Stripe 82 Galaxies**

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The galaxy disk warp is a common phenomenon, yet their properties and formation mechanism(s) are still unclear. Here, we introduce a new automatic measurement method for the warp properties of stellar disks in nearby edge-on galaxies, including warp's angle, shape, and asymmetry. We obtain isophotal maps of edge-on galaxies and express each of isophote contours in polar coordinates ( $\Phi$ ,  $R$ ) centered on the galaxy centers. Two peaks in the  $\Phi$ - $R$  diagram correspond to the outermost tips of each isophote. The locations of peaks, in turn, inform us of the misalignment between their inner and outer galactic planes, i.e., the warp. We apply this method to SDSS Stripe 82 co-added data and discuss its reliability and validity. Based on the measurement of warp properties, we also investigate their correlations with both intrinsic and environmental properties of warped galaxies.

**[ㄷGC-09] The study of SN2014J using the high-resolution spectra.**

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We observed a bright type Ia Supernovae SN 2014J located in the nearby starburst galaxy M82 using BOES (Bohyunsan Optical Echelle Spectrograph) for eight nights from day -11 (Jan. 22) to day +102 (May. 15) with respect to maximum brightness in B-band. We found the lines formed in the ejecta such as Si (6300 Å), whose velocity is more than 10,000km/s respect to the host galaxy as well as those formed in the circumstellar material (e.g. Na I D [5890 Å, 5896 Å], 100km/s) Also, we found other weak iron (5780 Å, 5797 Å, 6376 Å, 6613 Å, and 7543 Å), carbon (8059 Å) and other unknown elements. These lines are also thought to have been formed in circumstellar material. We expect that this study will contribute to revelation of the nature of the progenitor stars.