

photons can be characterized by strong linear polarization depending on their scattering optical depth. We performed Monte Carlo simulations of polarized radiative transfer of Ly $\alpha$  adopting simple scattering geometries relevant to the unification model of AGN. We find that for a low torus the Rayleigh scattered Ly $\alpha$  is polarized in the direction parallel to the symmetry axis with the polarization degree dependent on wavelength. In the case of a high torus, the core part of Ly $\alpha$  is polarized in the direction perpendicular to the symmetry axis whereas the wing part is parallelly polarized. We conclude that careful spectropolarimetry around Ly $\alpha$  can be useful in testing the AGN unification model.

**[ㄱ GC-13] BAT AGN Spectroscopic Survey-III. An observed link between AGN Eddington ratio and narrow emission line ratios.**

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The ultra hard X-ray band (14-195 keV) provides an important and unbiased way to understand black hole growth and relationship to the host galaxy. The Burst Alert Telescope (BAT) instrument on the Swift satellite has surveyed sky to unprecedented sensitivity, improving the number of known hard X-ray sources by more than a factor of 20 to 836 nearby AGN. The BAT AGN Spectroscopic Survey (BASS) is a study for the first large (N>600) and complete sample of ultra hard X-ray selected AGN with optical spectroscopy. In this talk, I present the observed relationship between black hole mass, bolometric luminosity, and Eddington ratio with optical emission line ratios. We show that [NII]/Ha ratio exhibits a significant correlation with Eddington ratio. We propose that the [NII]/Ha ratio is a useful indicator of Eddington ratio with 0.6 dex of scatter, and that it can be used to measure Eddington ratio and thus black hole mass from the measured bolometric luminosity, even for high redshift obscured AGN.

**[ㄱ GC-14] A Mid-infrared View on the Fast Galaxy Evolution in Compact Groups**

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We study the mid-infrared (MIR) properties of galaxies in compact groups and their environmental dependence using the Wide-field Infrared Survey Explorer data. We use a sample of 670 compact groups and their 2175 member galaxies with  $M_r < -19$  and  $0.01 < z < 0.0741$  from Sohn et al. (2016), which were identified through a friends-of-friends algorithm. We find that the MIR [3.4]–[12] colors of early-type galaxies in compact groups are on average bluer than those of early-type galaxies in clusters. Furthermore, we find that when compact groups have both early- and late-type member galaxies, the MIR colors of the late-type galaxies in those compact groups can be bluer than those of late-type galaxies in clusters. We also find that as background galaxy number densities of compact groups increase, compact group galaxies have higher early-type galaxy fractions and bluer MIR colors. These trends are also seen for background galaxies. However, at a given background density, compact group galaxies always have higher early-type galaxy fractions and bluer MIR colors than the background galaxies. Our findings suggest that the properties of compact group galaxies depend on both internal and external environments of the compact groups, and that galaxy evolution is faster in compact groups than in clusters.

**[ㄱ GC-15] Ram Pressure Stripping of an elliptical galaxy in Abell 2670**

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Ram pressure stripping of early-type galaxies has been largely neglected until now because of their gas poor nature. MUSE IFU observation vividly reveal the presence of star-forming blobs and ionised gas tails, around an early-type galaxy in Abell 2670. The galaxy was identified as a post-merger galaxy with disturbed faint features, in MOSAIC 2 deep optical images. The imaging also revealed a series of star-forming blobs, situated in