[구GC-07] Jitter Radiation for Gamma-ray Burst Prompt Emission

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We utilize the jitter radiation, which is the emission of relativistic electrons in the random and small-scale magnetic field, to investigate the high-energy emissions of gamma-ray bursts (GRBs). Under the turbulent scenario, the random and small-scale magnetic field is determined by the turbulence. We also estimate the acceleration and cooling timescales. We identify that some GRBs are possible cosmic-ray sources.

[구GC-08] Calibrating high-z QSO masses using near-IR and optical spectra

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Using the newly commissioned Fiber-Multi-Object-Spectrograph at the Subaru telescope, we obtained near-IR spectra of a sample of 19 AGNs at $0.6 < z < 2.6$, selected from the NOAO Deep Wide-Field Survey (NDWFS) Bootes field, in order to calibrate high-z black hole mass (MBH) estimators. MBHs are generally determined through the kinematics of ionized gas clouds around the black hole assuming virial equilibrium. The velocity profiles of Hβ/Hα, MgII and CIV are used to infer the gas kinematics of low-z, mid-z, and high-z quasars, respectively. However, the MBH based on MgII and CIV is not very well calibrated. We compare the Hα - based MBH estimates from the new FMOS near-IR spectra, with the MgII-based MBH estimates from our existing optical spectra, and investigate the systematic differences.