

NSYSU

physics 書報討論 Weekly Seminar

Accreting Supermassive Black Holes and Their Role in Galaxy Evolution

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There is ample evidence that supermassive black holes (SMBHs), with masses of 10^5 to 10^{10} solar masses, exist in the nuclei of all massive galaxies and that the masses of the SMBHs scale with properties of their host galaxies, e.g. stellar velocity dispersion ($M_{\text{BH}} - \sigma_*$), bulge mass ($M_{\text{BH}} - M_{\text{Bulge}}$), and stellar mass ($M_{\text{BH}} - M_*$). These scaling relations are believed to be the result of the interaction between SMBH and its host galaxy and their coevolution. Some SMBHs accrete gas, dust and, occasionally, whole stars from their host galaxies, and are called active galactic nuclei (AGNs). As the accreted material, which typically forms an equatorial accretion disk, heats up, it emits X-ray photons that ionize the surrounding material. In addition, relativistic jets of material can be ejected perpendicular to the accretion disk. This “AGN feedback” interacts with the material in the host galaxy and intergalactic medium and influences the star formation and growth of the galaxies. This talk will give an overview of the AGNs and focus on the low-mass end of SMBH-galaxy relations which can constrain the formation mechanisms for seed black hole formation in the early universe and the mechanisms for SMBH-galaxy coevolution.

future seminars

