S15c High Spatial Resolution NIR Studies on a Host Galaxy of a γ-ray Emitting Blazar

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Blazars are a peculiar class of radio-loud active galactic nuclei (AGN), characterized by their relativistic jets along our line-of-sight. Their emission is dominated by the non-thermal continuum produced in the jet all over the frequencies. At high energies (GeV-TeV regime), blazars represent the vast majority of the extragalactic sources detected by satellites like Fermi/LAT while some new classes of gamma-ray emitters, such as Narrow-Line Seyfert 1s and Seyfert 2s, have been recently identified. Blazars are also considered emitters of PeV neutrinos that can be detected e.g. by the IceCube experiment. From the point of view of optical spectra, blazars are divided into two subclasses: the flat spectrum radio quasars, that show prominent emission lines, and the BL Lacertae objects, characterized by extreme weakness or absence of emission and/or absorption lines that makes the determination of their distances very difficult. Studies of BL Lacs' host galaxies are also difficult due to observational limits to resolve the host galaxy strongly outshined by its bright nuclear core.

In this presentation, we introduce our method to study such host galaxies based on a recent pilot study using Subaru telescope. We here show first observational results of a potential high-z ($z \sim 1.36$ from SDSS/BOSS) blazar (J150101.83+223806.3) host galaxy. We obtained high spatial resolution (adaptive optics supported) near-infrared imaging and spectroscopic data with IRCS+AO188. Our results indicate that the galaxy is located at low redshift based on the properties of the resolved host galaxy after decomposing the blazar images.