

Z115a Multiphase properties of ISM in a nearby radio galaxy, NGC 1316

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NGC 1316 (a.k.a. Fornax A) is one of the nearest (~ 20 Mpc) and most prominent radio galaxies in the local Universe, and located at the center of a subgroup of the Fornax cluster. Its proximity makes this galaxy one of the most ideal targets to study the effect of radio jet on the interstellar medium (ISM) properties. We have observed NGC 1316 with ALMA/ACA and Keck/Low Resolution Imaging Spectrometer (LRIS) to investigate its molecular-gas and ionized-gas properties, respectively. We could successfully detect CO($J=1-0$), [OII] $\lambda 3727$, [OIII] $\lambda 5007$, H α ($\lambda 6563$), and [NII] $\lambda\lambda 6548, 6583$ emission and found some observational evidences indicating a (nuclear) jet-ISM interaction (KMM+2019a) such as: (1) jet-bending at the vicinity of peaks of molecular gas distribution possibly due to buoyant effect and/or ram-pressure from ISM, and (2) spatially extended LINER-type excited ionized gas (high [OII] $\lambda 3727$ /[OIII] $\lambda 5007$ and [NII] $\lambda 6583$ /H α ratios). In this contribution, we compare our ALMA data with archival imaging data of atomic gas and radio continuum obtained with MeerKAT and optical IFU data taken with VLT/MUSE, and discuss a spatial correspondence of the jet and multiphase ISM in NGC 1316. Based on this multi-wavelength study of NGC1316, we also discuss possible follow-up Subaru observations of other our ALMA targets in the Fornax cluster (64 in total).