Z107a ALMA OBSERVATIONS OF HCN AND HCO^+ OUTFLOWS IN THE MERGING GALAXY NGC 3256

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Galactic-scale molecular gas outflow is an important phenomenon as a feedback mechanism in galaxy evolution scenario. We report ALMA detection of dense molecular gas outflow traced by HCN and HCO^+ from the nearby merging double-nucleus galaxy NGC 3256. The southern nucleus is believed to be a low-luminosity AGN and northern nucleus shows no obvious signs of AGN. We find that HCN (1–0) and HCO^+ (1–0) outflow is from the southern nucleus, which is possibly associated with radio jet. On the other hand, the same lines were undetected in the outflow region associated with the northern nucleus. In the southern nucleus, the HCN^+ (1–0)/CO (1–0) line ratio (i.e. dense gas fraction) and the CO (3–2)/CO (1–0) line ratio are both larger in the southern outflow than in the southern nucleus. Investigating these line ratios for each velocity component, we find positive gradient against velocity offset for the dense gas fraction and negative gradient for the CO (3–2)/CO (1–0). One possible scenario to explain these findings for southren outflow is a two-phase (diffuse and clumpy) outflow. Such outflow might be produced by an interaction between the jet and the interstellar medium possibly associated with shock and/or star formation along the outflow.