

HI Gas in and around a Nearby Extremely Metal-Poor Galaxy with MeerKAT

○金子 裕輝¹ 日下部 晴香¹ 鈴木 建¹ 榎谷 玲依² Mophahlane Koketso Vincent³ Chibueze James⁴ Herenz Edmund Christian⁵ Maulick Soumil⁶ Monreal Ibero Ana⁷ (1.東京大学 2.国立天文台 3.Rhodes University 4.University of South Africa 5.Inter-University Centre for Astronomy and Astrophysics 6.Stockholm University 7.Leiden University)

To understand galaxy formation and evolution, it is crucial to characterize the gas content and kinematics in and around early-stage galaxies, as these govern their evolution (Tumlinson *et al.* 2017; Collins & Read 2022). However, observing the circumgalactic medium (CGM) of early-stage galaxies at high redshifts is difficult. Nearby extremely metal-poor galaxies (EMPGs), defined with a metallicity of $Z \leq 0.1 Z_{\text{sun}}$ (Kniazev *et al.* 2003), have attracted attention as local analogs. To date, the neutral and ionized CGM of EMPGs has not been thoroughly investigated yet, except for a starburst EMPG with a companion, SBS 0335-52E (Herenz *et al.* 2023). Therefore, we conducted HI 21cm line observations with MeerKAT radio interferometer (11h integration, MKT-24047) for the EMPG J1044+0353 ($z = 0.013$, $D = 56$ Mpc, Herenz *et al.* 2025), whose CGM-scale HII gas distribution has been revealed through H α observations using the optical integral field spectrograph VLT/MUSE. The MeerKAT data were reduced with the pipeline CARACal. In the obtained data cube, we successfully detected the 21cm emission extending up to the CGM scale at the expected target position and frequency. In this presentation, we report the spatial distribution of the HI column density and the gas mass as our initial results. We discuss whether J1044+0353 retains abundant gas, and compare the spatial distributions of HI and HII.