

S18c NuSTAR Discovery of a Compton-thick Dust-obscured Galaxy WISEJ0825+3002

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We report the discovery of a Compton-thick (CT) dust-obscured galaxy (DOG) at $z = 0.89$, WISEJ0825+3002, observed by *Nuclear Spectroscopic Telescope Array* (*NuSTAR*). X-ray analysis with the XCLUMPY model (Tanimoto et al. 2019) revealed that hard X-ray luminosity in the rest-frame 2–10 keV band of WISEJ0825+3002 is $L_X(2-10\text{ keV}) = 4.2_{-1.6}^{+2.8} \times 10^{44} \text{ erg s}^{-1}$ while its hydrogen column density is $N_H = 1.0_{-0.4}^{+0.8} \times 10^{24} \text{ cm}^{-2}$, indicating that WISEJ0825+3002 is a mildly CT active galactic nucleus (AGN). We performed the spectral energy distribution (SED) fitting with the code investigating galaxy emission (CIGALE) to derive its stellar mass, star formation rate, and infrared luminosity. The estimated Eddington ratio based on stellar mass and integration of the best-fit SED of AGN component is $\lambda_{\text{Edd}} = 0.70$, which suggests that WISEJ0825+3002 harbors an actively growing black hole behind a large amount of gas and dust. We found that the relationship between luminosity ratio of X-ray and $6 \mu\text{m}$, and Eddington ratio follows an empirical relation for AGNs reported by Toba et al. (2019a) (Toba et al. 2019c, ApJ, in press.).