
CGM emission predictions from cosmological zoom-in simulations

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Abstract

Gas flows in and out of galaxies are poorly constrained and understanding these processes is crucial to studies of galaxy evolution. Observations of the Circum-Galactic Medium (CGM), where these processes take place, are therefore essential for making progress in understanding gas flows but remain challenging as this medium is intrinsically thin and very faint. To improve observing strategies, we have made CGM emission predictions from dedicated cosmological zoom-in simulations. We use hydrodynamical AMR RAMSES simulations down to $z=0$ with a maximum spatial resolution of 380 pc/h in the central region. Using CLOUDY emissivity models for different lines (e.g. Ly-alpha, CIV, OVI, OVIII), we post-process galaxy halos from the simulation with these models and compute the expected emission from the gas in the CGM. These post-processed simulated halos then give the flux for different lines at different redshifts and can be used as estimates for the observations in different wavelength regimes (X-Ray, UV, optical, IR).

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