# X39a Effect of heat conduction onto cold streams accretion inside circum-galactic-medium of massive high redshift galaxies

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Cold gas streams ($T \sim 10^4$ K) are crucial for explaining the star formation in high-redshift galaxies. Cosmological hydrodynamic simulations commonly show the infall of cold gas streams onto galaxies. Recent studies aim to theorize the survival condition of cold streams surrounded by the hotter ($\sim 10^6$ K) circum-galactic medium (CGM) materials. However, the interplay of different physics along with thermal conduction has not yet been studied. As thermal conduction can affect the lifetime of cold streams, it is important to investigate its role. In our study, we attempt to fill one of the gaps by considering the importance of anisotropic thermal conduction, along with radiative cooling and magnetic field. For this purpose, we implemented an anisotropic heat conduction solver extension for the MHD code Athena++ (Stone et al., 2020). By considering a 2-dimensional simplified local model of a magnetized cold stream, we simulate its evolution under different velocities. We find that overall, the twisting of magnetic field lines prevents diffusion of the cold stream from thermal conduction. Thermal conduction either enhances or lowers condensation by $\pm 5 - 10\%$ depending on the initial interface smoothing length. Overall, we show that cold mass accretion remains constant over time. We also find that an initial component of the magnetic field perpendicular to the stream enhances the magnetic energy by a factor of 100, lowering the thermal energy decay and possibly the associated emissions.