



Local Group progenitors: Lyman Alpha bright?

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We present a novel approach of identifying the Milky Way (MW) and Andromeda (M31) progenitors that could be visible as LAEs at $z \sim 6$: we couple a snapshot from the Constrained Local Universe Simulations (CLUES) project, that successfully reproduces the MW and M31 galaxies situated in their correct environment, to a Lyman Alpha Emitter (LAE) model. Exploring intergalactic medium (IGM) ionization states ranging from an almost neutral to a fully ionized one, we find that including (excluding) the effects of clustered sources the first local group progenitor appears as a LAE for a neutral hydrogen fraction of 0.4 (0.1). This number increases to 5 progenitors each of the MW and M31 being visible as LAEs for a completely ionized IGM; the contribution from clustered sources is crucial in making many of the progenitors visible in the Lyman Alpha, for all the ionization states considered. We also put constraints on the physical properties of such progenitors. Finally, we find that the number density of these LAEs are higher than that of general field LAEs (observed in cosmological volumes) by about two (one) orders of magnitude for a neutral hydrogen fraction of 10^{-5} (0.4). Detections of such high LAE number densities at $z \sim 6$ would be a clear signature of an over-dense region that could evolve and resemble the local group volume at $z=0$.

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