

Summary:

Considering $1 \text{ atom} / \text{m}^3 \sim 1.66 \times 10^{-30} \text{ g/cc}$

Our Solar system: $\sim 10^{21}$ Hydrogen atoms
per cubic met

Sun and Near stars in the solar system

~ 1 million per cubic
met of H-atom

Same with Galaxy.

Inter Galaxy and Universe are

simultaneously dense regions,

1 H-atom to a few,
per cubic met.