whose visual manitudes of the horizontal branch are known. The space distribution of the globular clusters and the chemical evolution of the halo are examined, suggesting the initial mean gradient of metallicity, $d[Fe/H]/dr_G \simeq -0.06\ kpc^{-1}$ for the halo in galactocentric distance, $r_G < 20$ kpc and a slow collapse of the protogalaxy.

CHEMICAL EVOLUTION OF INTERSTELLAR CLOUNDS AND VARIATIONS OF MOLECULAR ABUNDANCES

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The abundances of simple molecules are examined in terms of the time-dependent cloud evolution. The formation and destrcuction mechanisms of H_2CO are reviewed. The average value of the fractional abundance of H_2CO is derived to be in the range of 10^{-10} to 5×10^{-9} This is comparable to the observed values. The expected variations of the molecules formed from or destroyed by CO, CI, and C^+ whose abundances depend on the evolutionary state of the cloud, are discussed.

CONFIRMATION OF ELECTRON TEMPERATURE GRADIENT IN OUR GALAXY

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Various assumptions used in interpreting recombination line observations are critically assessed to confirm the gradient of electron temperature with distance from the galactic center. The total temperature increase between 5 and 13 kpc is about 2,500°K. Among many suggestions, we have singled out decrease of trace element abundances with the galactocentric distance as the most viable cause for the temperature-gradient. This will impose an important constraint on evolutionary models of the Galaxy.