

Looking for a possible evolutionary relationship between circumgalactic gas clouds (DLAs, LLSs, pLLSs) and globular clusters

Acharova I.A. (Faculty of Physics, Southern Federal University, Rostov-on-Don, Russia), Sharina M.E. (Special Astrophysical Observatory, Russian Academy of Sciences, N. Arkhyz, KCh R, Russia)

Irina Acharova (iaacharova@sfnu.ru, iaacharova@gmail.com)
Southern Federal University, Russia

The analysis carried out in the work indicates the possibility to consider dense clouds of circumgalactic gas (Damped Lyman limit systems, partial Lyman limit systems and Lyman limit systems) observed in the neighbourhood of galaxies at redshifts of $0.1 < z < 1.1$ as being the residual parts of clouds, in which globular clusters (GC) have been formed. Conclusions have been drawn based on statistical analysis of the abundance of magnesium and iron in GCs and in circumgalactic clouds and on the spatial location of objects of both types. The amount of magnesium and iron, produced by first generations of GCs, does agree with hypotheses: 1) the minimum fraction of the mass of the galactic cloud that has transformed into the stars is 10%, while the mass of gas enriched with heavy elements is 20% of the original. 2) the maximum estimate of the mass of gas transformed to the stars is 25%, while the mass of the enriched part of the clouds is twice less than the original one. 3) the number of supernovae type 1a in the GC should be 2-4 times less (depending on the fraction of mass of the enriched part of the cloud) than the number of collapsing supernovae.