

STAR FORMATION INITIATED BY THE COLLISIONS AND
MERGERS OF THE GALAXIES IN DIFFERENT
COSMOLOGICAL EPOCHS

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As it was shown in the observations the collisions and mergers of galaxies exert the powerful initiating influence on the star formation on the galactic scales. These processes are accompanied by strong IR emission, OH maser flares and some other manifestation of the galactic activity. As the IR survey depth will increase the number of IR sources on the celestial sphere related to earlier epochs ought to also increase. The possible reason for the change of the IR source statistics is the evolution of the galaxy mass spectrum (GMS).

The model of GMS evolution developed on the base of these representations is considered in detail in our paper (Khersonskii & Voschinnikov, 1990, to be published). We conclude that in the earlier cosmological epochs the number density of the galaxies substantially exceeds the modern one. However all these galaxies are dwarfs. The counts of the number of starburst galaxies (such galaxies can be observed on far distances) can be used for the investigation of GMS in different cosmological epochs.

Our estimations show that the collisions and mergers of galaxies in earlier cosmological epochs probably are the powerful and steadily acting processes which initiate the star formation on the galactic scales. This star formation have to lead to rapid evolution of the heavy element abundances in earlier cosmological epochs. Their increase must be reduced in late epochs. Indeed the investigations of the absorption spectra of the quasars show that the evolution of the heavy element abundance is practically absent. Some individual rare systems formed in galaxies

which have accidentally undergone the small number of collisions demonstrated the reduced abundances of heavy elements. According to the model under consideration such galaxies have to be dwarfs.