INHOMOGENEITIES OF CHEMICAL COMPOSITION AND COSMOCHRONOLOGY PROBLEMS

V. G. Klochkova, V. E. Panchuk
Special Astrophysical Observatory RAS
Nizhniy Arkhyz, Stavropol'skii Kraii, 357147 Russia
E-mail: vkloch@sao.stavropol.su

ABSTRACT. The problems of determination of chemical composition of stars and connection with theory of chemical evolution of Galaxy are discussed.

Key words: Stars: abundances, evolution

The sequence and the details of the events provided the origin of different chemical elements has to be in general outlines restored uniting the results of nucleosynthesis calculations, the spectroscopic study of the chemical composition of stars and the data of cosmochemistry of meteorites. But the reliability of the different methods of age determination is limited by the availability of the unhomogeneities of chemical composition. The models of chemical evolution of the galactic disc are based on the assumption about an instantaneous recycling approximation. A such approach means a full matter mixing right away past a dredge up of the productions of stellar nucleosynthesis into the interstellar medium. For all that the observed unhomogeneities of a chemical composition from star to star are explained by systematic errors. However our unvestigations of chemical composition of stars, performed at 6-m telescope in 80th years, indicated on the availability in the galactic disc of real unhomogeneities of the chemical composition as from star to star inside of stellar clusters as between different galactic clusters. The spectroscopic observations from IUE showed that the unhomogeneities of chemical composition of gaseous part of interstellar medium have the same dispersion (0.1 dex) as for the stellar population in the galactic disc. The account of these results remove a lot of problems, for example, even the simplest approach of chemically unhomogeneous interstellar matter allows to reproduce most succesfully the G - dwarfs metallicity function. The estimations of the galactic radial abundance gradients, spectroscopically obtained, do not have a statistical validity taking into account the noted dispersion value.

The phenomena, noted immediately on chemical separation of matter into gaseous-dust envelopes of the selected type stars (the λ Boo stars on the main sequence and the stars post asymptotic giants branch), are now available for spectroscopists. There are not for the present any observed confirmations for processes, opposite to the separation. It is unclear where and how the "smoothing" of the chemical composition of the selected areas of the galactic disc is going after the transition of the different atoms and ions into solid fractions. We do not also see the results of such "smoothing".

The idea on matter unhomogeneity is also very fruitful for the interpretation of some details of the chemical composition in the Solar system. The following conclusions have to be made from the observed radiogeneous isotopic variations: a) there are more than two types of primordial matter with different nucleogeneous history into the Solar system; b) the Solar system was initially isotopic heterogeneous and retain this property. A mechanism of origin of the chemical and isotopic anomalies in the protosolar nebula is based on the separation of the near Supernovae matter on gas and dust with the following dust injection in the outer layers of a nebula. In general the results of the investigation of the chemical composition of the Solar system insist on refuse from the

persistent nucleosynthesis model. As summary the persistent – discrete model, where an exponential slope of the stellar nucleosynthesis is added by the next discrete peaks, is suggested. Thus the discover of chemical unhomogeneities of protostellar, stellar and protosolar matter complicates the problem of a determination of an object age using its chemical composition and leads to the necessary of a development and an inclusion into chemical evolution models of approximations accounted an influence of phases "gas-dust" transitions.

The classic method of an age determination using the isochrones, calculated with given helium and heavy elements abundances, has also the problems. For example, an age of individual stars in the galactic field is determined without problems, but the use of a such method for the stars inside open clusters leads to the age dispersion that exceeds, as a rule, a cluster age, derived by turning-point. Our investigations show that the age determination "errors" do not correlate with individual differences of chemical composition.

The investigations of far field galaxies show that the probability of merging of two galaxies is sufficiently high. The evidents of a such merging of the our Galaxy with the Magellanic Clouds system are found. This complicates some more the creation of a self-consistent picture of the chemical evolution of the Galaxy.

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INTERPRETATION AND SOLUTION OF THE LIGHT CURVE OF THE WOLF-RAYET ECLIPSING BINARY CQ CEP

T. A. Kartasheva[1], M. A. Svechnikov[2]
[1] Special Astrophysical Observatory of RAS
[2] Chelyabinsk State University

ABSTRACT. In spite of authors of numerous solutions of light curve of CQ Cep, which consider the latter as caused basically by effects of ellipsoidal form and components eclipse, we continue to insist upon the compound character of light curve of this very close system.

We consider that about a half of amplitude of overwhelming majority of light curves of CQ Cep is caused by light variability of common system envelope which is utmost inhomogeneous is density and only a half is connected with the effects of ellipsoidal form and component eclipse.

As a result of light curve correction for orbital eccentricity and introduction into consideration of a third brightness (the brightness of common envelope) a more precise solution has been obtained for light curve with the most low amplitude and, probably, less distorted by envelope inhomogeneities.

The analysis of this solution allowed us to make more precise determination of the companion luminosity class, and to understand the reason of difficult detection of lines of the latter in the system spectrum, to make more precise the model of CQ Cep and its evolution in time, to understand the nature of high amplitude light curve of the system.

Key words: Stars: Eclipsing Binaries, WR