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EXPLOSION OF LOW-MASS NEUTRON STAR IN CLOSE BINARY SYSTEM AND NUCLEOSYNTHESIS OF HEAVY ELEMENTS.

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First observation of neutron star merger and registration of heavy elements presence in this process [1] confirmed our understanding that main scenario for the r-process is connected with the ejecta during neutron star merger (NSM) at the end of close binary system evolution rather than with the supernova explosion [2]. A number of NSM model were created [3] since 1999 year and with their help the main conditions of the r-process in jets were researched. Neutron stars in close binaries is approaching each other because the system lost angular momentum due to gravitation wave emission. Further evolution of their mutual approaching and merger depend on masses of binary components. In case when masses are close to each other and when the mass of every component is close to solar mass (it usually is called as “standard”neutron star mass), then scenario of neutron stars merger is realized.
In present report we will discuss the binary of neutron stars when neutron stars have significantly different masses, $m_1 > m_2$ [4]. In such a binaries the matter of the component with smaller mass starts to flow from low-mass companion to higher-mass one m_1. When the mass of low-mass neutron star have reached the minimum mass value ˜$0.1M$, the low-mass companion lost its hydrodynamical stability and blows up [5].
On the results of first calculations of low-mass companion of close neutron stars system, for the ejecta with different chemical composition the nucleosynthesis calculations of heavy elements were done and theoretical abundances of heavy elements are in a good agreement with our knowledge of solar system matter.
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