Rate analysis or a possible interpretation of abundances

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Heavy elements are formed in nucleosynthesis processes. Abundances of these elements can be classified as elemental abundance, isotopic abundance, and abundance of nuclei. In this work we propose to change nucleon identification from the usual (Z, A) to (Z, N), which allows for reading out new information from the various measured abundances.
We are interested in the neutron density required to reproduce the measured abundance of nuclei assuming equilibrium processes. This is only possible when two stable nuclei are separated by an unstable nucleus. At these places we investigated the neutron density required for equilibrium nucleosynthesis both isotopically and isotonically at temperatures of AGB interpulse and thermal pulse phases. We obtained an estimate for equilibrium nucleosynthesis neutron density in most of the cases. Next we investigated the possibility of partial formation of nuclei. We analyzed the meaning of the branching factor. We found a mathematical definition for the unified interpretation of a branching point closed at isotonic case and open at isotopic case. We introduce a more expressive variant of branching ratio called formation rate. With these we are capable of determining the characteristic neutron density values. We found that all experienced isotope ratios can be obtained both at $10^8\mathrm{K}$ temperature and at $3\cdot10^8\mathrm{K}$ temperature and at intermediate neutron density ($\leq 2\cdot10^{12}\mathrm{cm}^{-3}$).