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## Effect of co-annihilation on Big Bang Nucleosynthesis

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**Abstract :** The light matter abundance of our universe is sensitive to the neutron-to-proton ratio in the cosmic soup during the first phase of BBN. We consider a generic exotic particle species which co-annihilates with nucleons potentially modifying the neutron-to-proton ratio, thereby affecting the BBN predictions. In particular, the thermal freeze-out of the particle species via the co-annihilation controls the neutron freeze-out dynamics. We find that when the mass of the particle is comparable with the nucleon mass, the co-annihilation strength can be greater than the weak interaction strength without altering the BBN predictions.

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