

Weekly Report

Summary

- **Period:** Jan 11 to Jan 18, 2021.
- **Task Finished:** Reproduce the abundance- m_χ curves (8 curves) in paper arXiv:1312.5725 and arXiv:1411.6005.
- **Questions still need to clarify:**
 - How does WIMP change the standard BBN process, provide a different Y_p and change the CMB power spectrum signal.
- **Plans for next weeks:**
 - Continue reading arXiv:1312.5725 and arXiv:1411.6005. Clear the standard BBN physics, and the impact on Y_p and CMB after adding WIMP.
 - Understand the BBN code for WIMP effect in details.
 - Prepare for the presentation on Friday (Jan 22, 2021).

Progress in Details

I have uploaded the curves to my github space. This time I consider 4 types of WIMPs (real scalar, complex scalar, Majorana fermion and Dirac fermion) and two coupling (coupled to SM neutrino, electromagnetically coupled). I study four element abundance (Y_p , H_2/H , He_3/H , Li_7/H) and the curves are consistent with the papers.