Constraints on Neutrino Oscillations and Spectra from Neutrino Nucleosynthesis\(^1\) SAM M. AUSTIN, MSU/NSCL, ALEX HEGER, CLARISSE TUR, JINA COLLABORATION — We have studied the sensitivity to variations in the triple alpha and \(^{12}\text{C}(\alpha, \gamma)^{16}\text{O}\) reaction rates, of the yield of the neutrino process isotopes \(^7\text{Li}, ^{11}\text{B}, ^{19}\text{F}, ^{138}\text{La},\) and \(^{180}\text{Ta}\) in core collapse supernovae. Compared to solar abundances, less than 15% of \(^7\text{Li},\) about 25-80% of \(^{19}\text{F},\) and about half of \(^{138}\text{La}\) is produced in these stars. Over a range of \(\pm 2\sigma\) for each helium-burning rate, \(^{11}\text{B}\) is overproduced and the yield varies by an amount larger than the variation caused by the effects of neutrino oscillations. The total \(^{11}\text{B}\) yield, however, may eventually provide constraints on supernova neutrino spectra.

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