Contribution ID: **47** Type: **Poster**

A Fresh Look at Neutrino Self-Interactions With the Lyman-α Forest

We present the first analysis of neutrino self-interactions with two new, state-of-the-art Lyman-α likelihoods: an EFT-based likelihood developed from the Sherwood simulation suite, and a compressed likelihood developed from the PRIYA simulation suite. We find that the inclusion of either Lyman-α dataset penalizes the delay in neutrino free-streaming, previously found to be highly preferred by a combination of CMB and LSS data. We also jointly analyze *Planck* and DESI BAO data, which does not alter the preference for ΛCDM over neutrino-neutrino scattering found in a *Planck*–only analysis. Our results highlight the importance of modeling the Lyman-α forest accurately.

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