

While we studied variations in the RFG model itself to determine the level of this uncertainty for MiniBooNE, the results were verified against the predictions of other, more sophisticated model calculations. MiniBooNE specifically requested plots of the  $\nu_e/\nu_\mu$  QE cross section ratio for superscaling and spectral function-based predictions relative to the naive RFG from several nuclear theorists (Figure 4.2) [13, 14]. The variations in the  $\nu_e/\nu_\mu$  predictions for these models (relative to RFG) are consistent with (if not smaller than) our findings in varying the model parameters within the RFG. In all cases, the  $\nu_e/\nu_\mu$  cross section difference appears to be negligible above  $\sim 400$  MeV, and only grows to significant values below  $\sim 200$  MeV. The consistency in these results provides confidence in the uncertainty we have chosen.

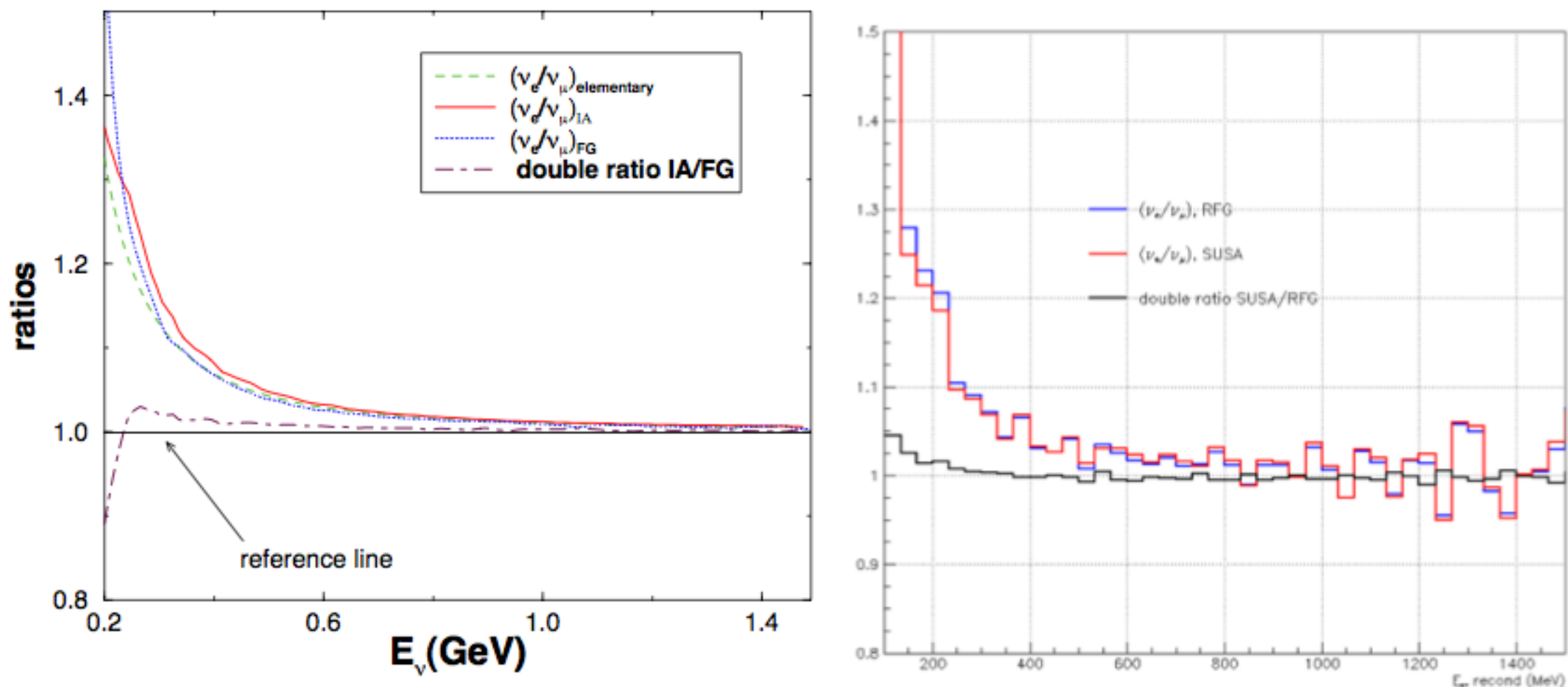


Figure 4.2: Plots of the  $\nu_e/\nu_\mu$  ratio for spectral function (left) [13] and superscaling (right) [14] based models. Also shown in each case is the double ratio of  $(\nu_e/\nu_\mu)_{\text{other model}}/(\nu_e/\nu_\mu)_{\text{RFG}}$  which is the relevant quantity to be compared to the bottom panel of Figure 4.1.