

SLAC Proton Cross Section Data

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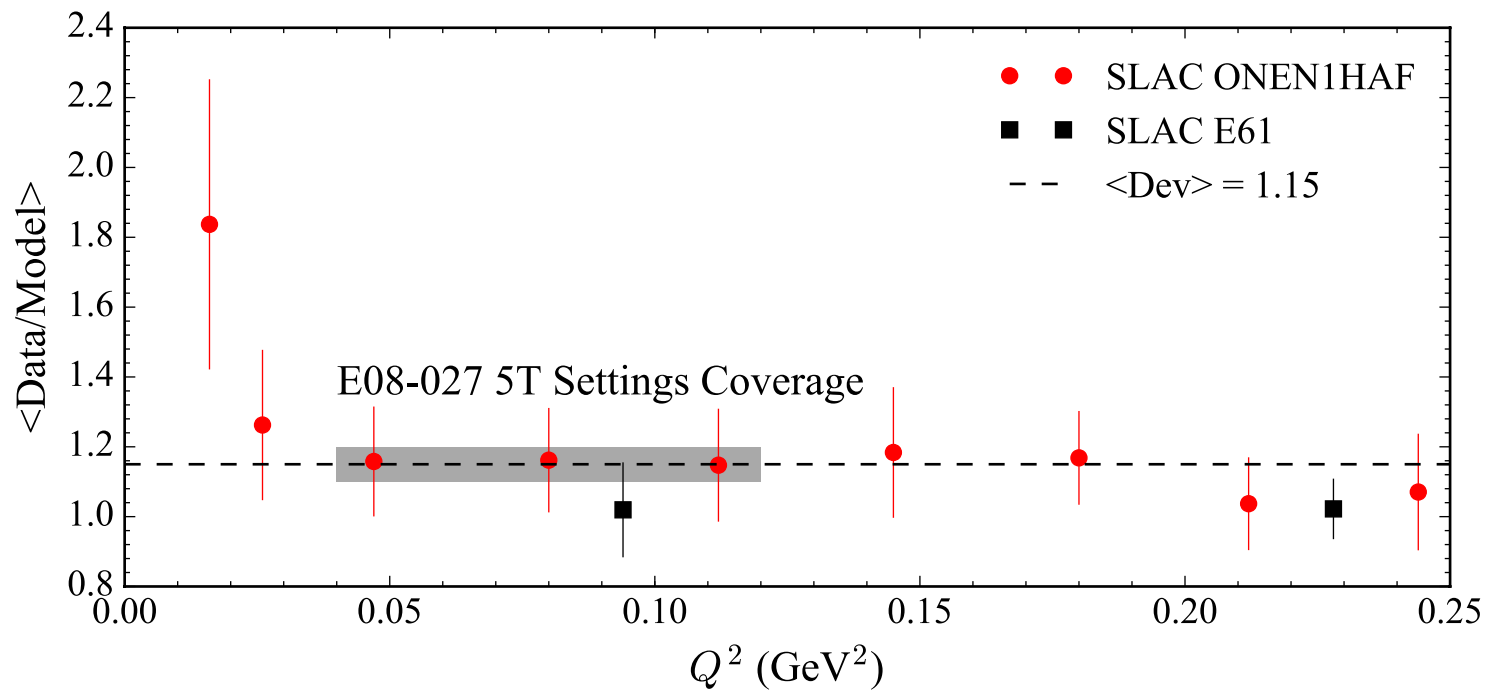
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Overview

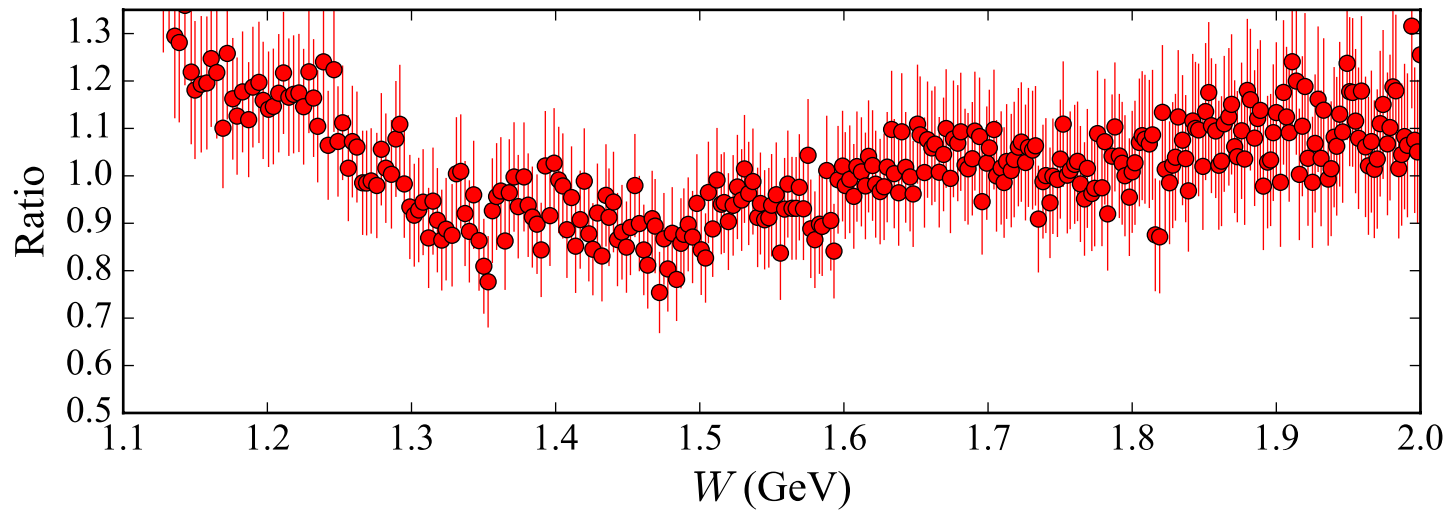
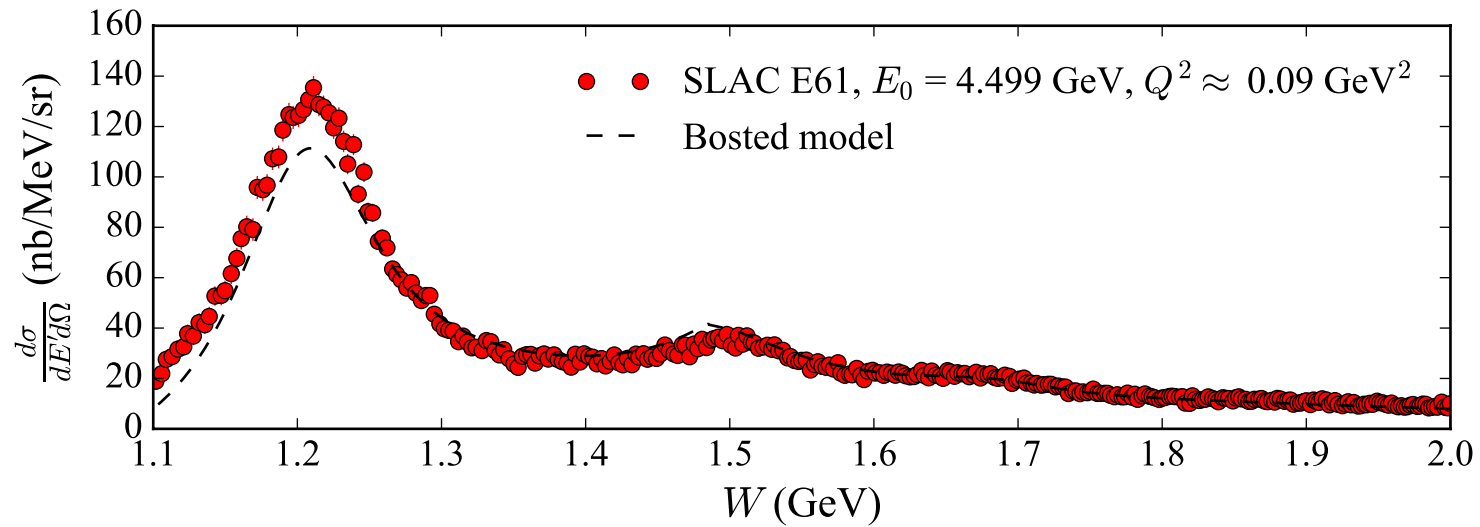
- Found some old SLAC proton cross section data
 - Hall C Resonance Data Archive: <https://hallcweb.jlab.org/resdata/database/>
 - Experiments: Onen1haf and E61
 - E61 data is a 1990's re-analysis of data taken in the 1970's ($\theta = 4^\circ$)
 - Can't find anything on Onen1haf ($\theta = 1.5^\circ$, hence the name)
- Useful to g2p because some of it is at low Q^2
 - Goes as low as $Q^2 = 0.016 \text{ GeV}^2$
- Can make comparisons to Bosted model to give an idea of the systematic uncertainty from using the model for now
 - Lowest data Q^2 used in Bosted's fit is approximately 0.3 GeV^2 (at the Delta)
 - Bosted claims he fits data down to 0.06 GeV^2 which is technically true but this is at large W and not in the resonance region
 - Fit constrained with photoproduction data at $Q^2 = 0$.

Data/Model Comparison

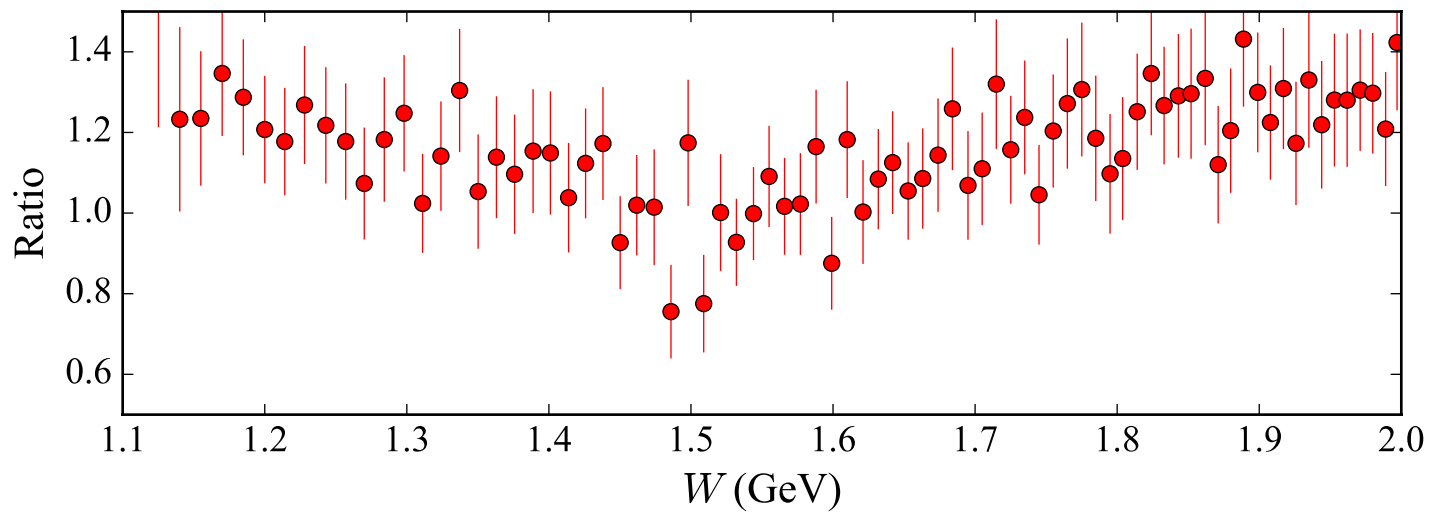
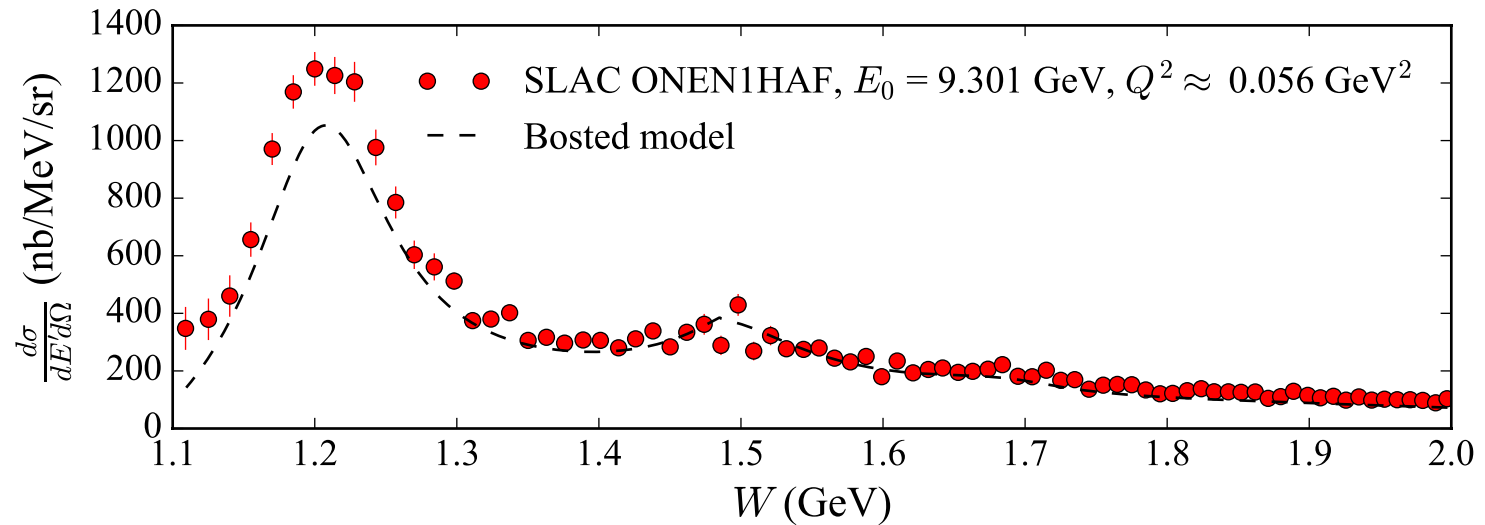
- Take ratio of data to model at each kinematic point at an energy setting and then take average weighted by statistical uncertainty to get the points shown below
- Error bars are standard deviation of that average
- Q^2 value is from the Delta-resonance



Data/Model Comparison



Data/Model Comparison



Going Forward

- Bosted model uncertainty on the order of 15-20% at our kinematics for 5T based upon SLAC data
 - But worse for the 2.5T settings!!
- Also looking into how results change if I scale Bosted up for 15% to center the deviation around 1 (spread is still +/- 15%)
- Questions/Comments/Concerns?