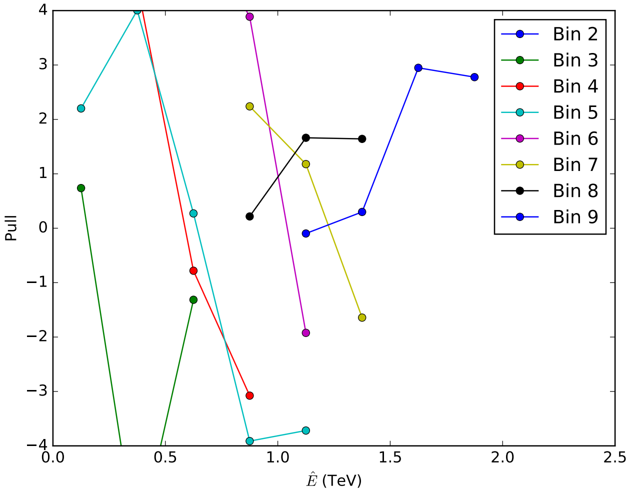
Dependence of goodness of fit on angular-bin radius

- Known data/MC discrepancy in angular resolution.
- Seems to be due to curvature model in MC. May be fixed with new MC set.
- Discrepancy could be affecting *p*-values since count/expectation is integrated over angular bin.
- Using a wide angular bin could make *p*-value robust against angular-resolution modeling.

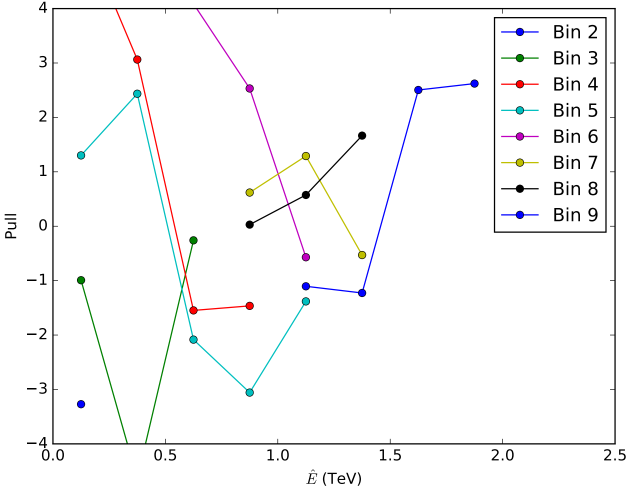
NN with radius $= 1.0 \times$ optimal radius

- $p = 7.2 \times 10^{-52}$.



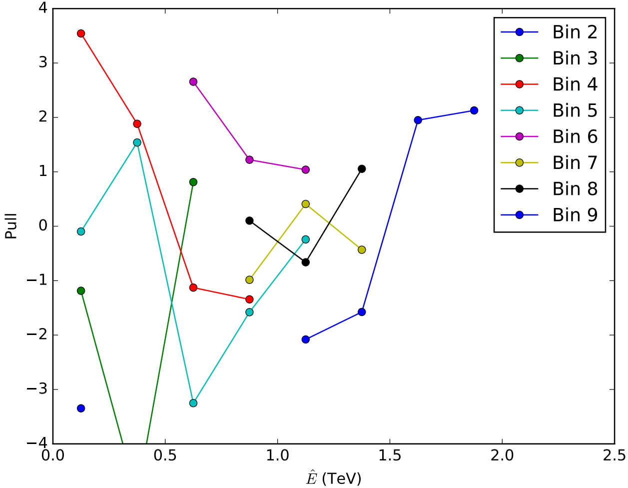
NN with radius = 1.5 × optimal radius

- $p = 7.2 \times 10^{-21}$.



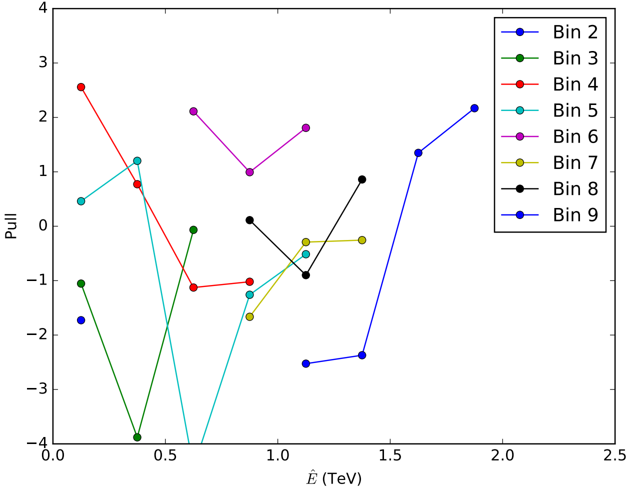
NN with radius = 2.0 × optimal radius

- $p = 6.7 \times 10^{-11}$.



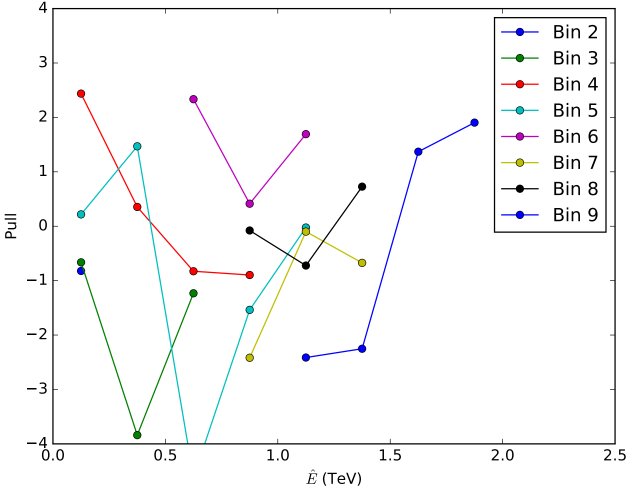
NN with radius = 2.5 × optimal radius

- $p = 1.2 \times 10^{-7}$.



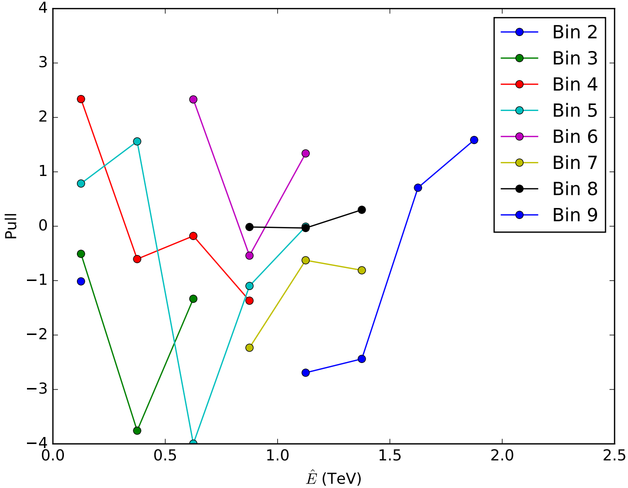
NN with radius $= 3.0 \times$ optimal radius

- $p = 1.7 \times 10^{-7}$.



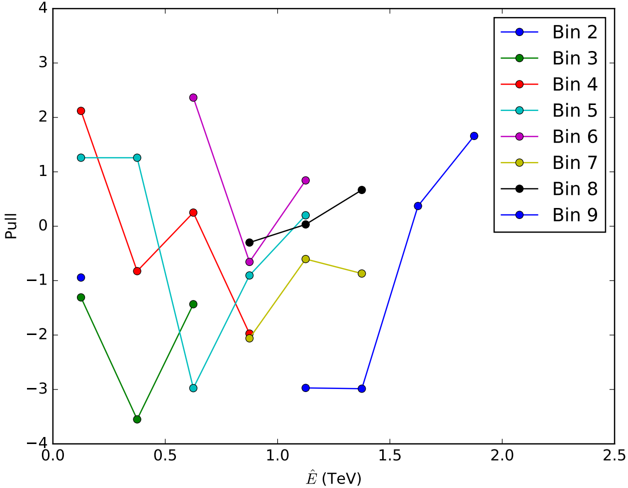
NN with radius = 3.5 × optimal radius

- $p = 3.9 \times 10^{-6}$.



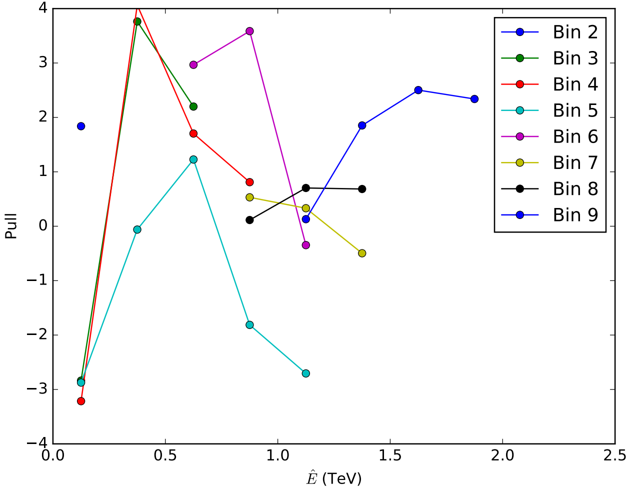
NN with radius = 4.0 × optimal radius

- $p = 1.3 \times 10^{-5}$.



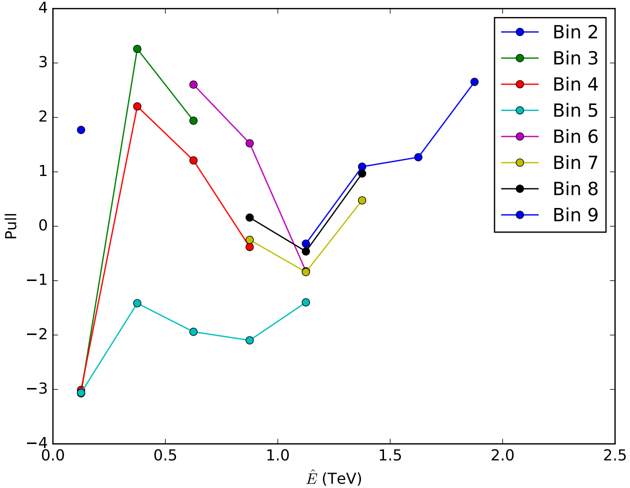
GP with radius $= 1.0 \times$ optimal radius

- $p = 1.5 \times 10^{-15}$.



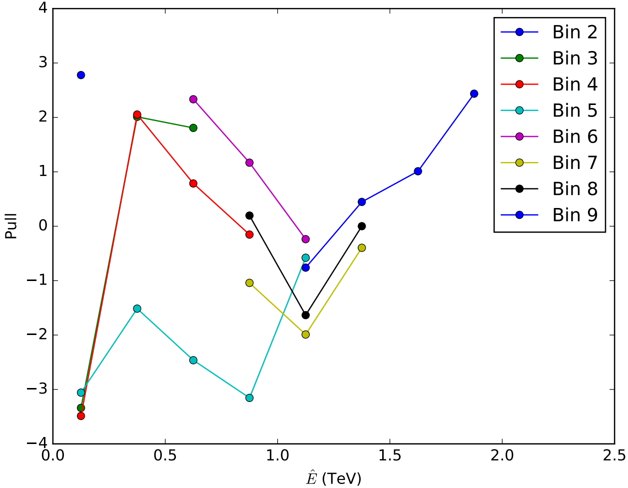
GP with radius = 1.5 × optimal radius

- $p = 8.1 \times 10^{-9}$.



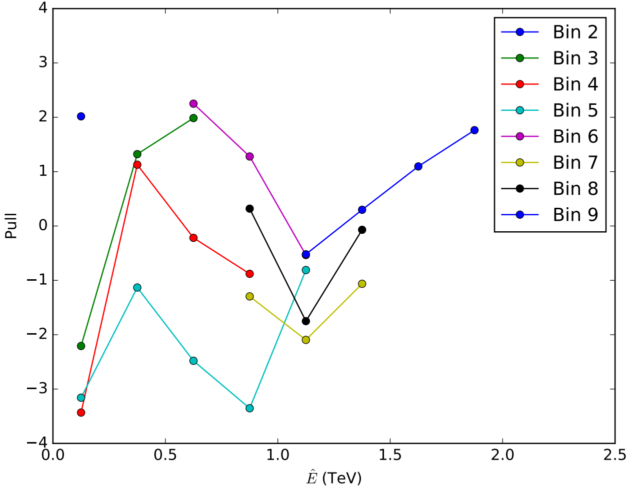
GP with radius = 2.0 × optimal radius

- $p = 1.5 \times 10^{-9}$.



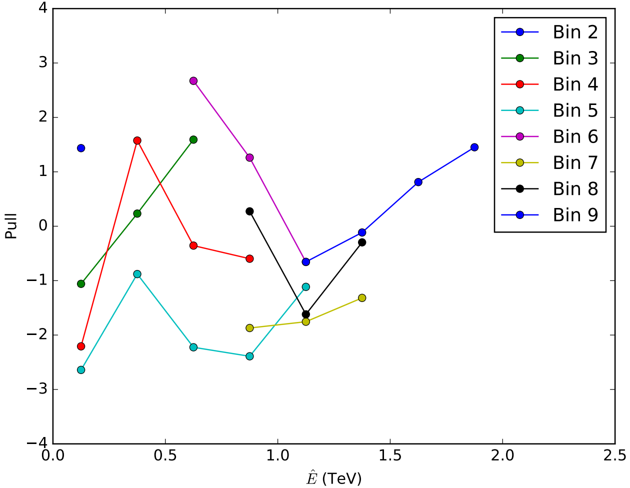
GP with radius = 2.5 × optimal radius

- $p = 4.7 \times 10^{-7}$.



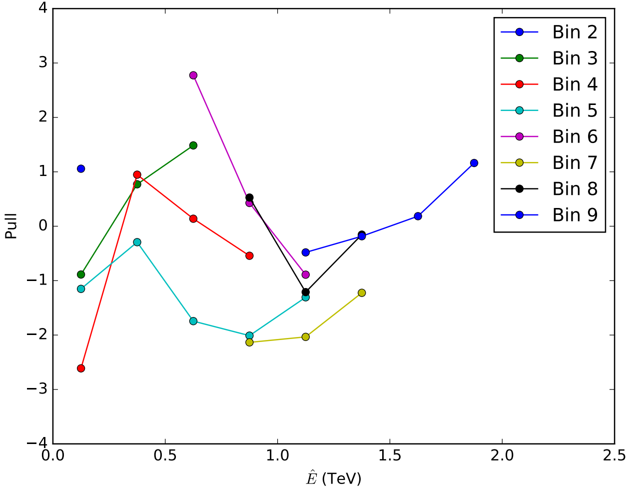
GP with radius = 3.0 × optimal radius

- $p = 0.00057$.



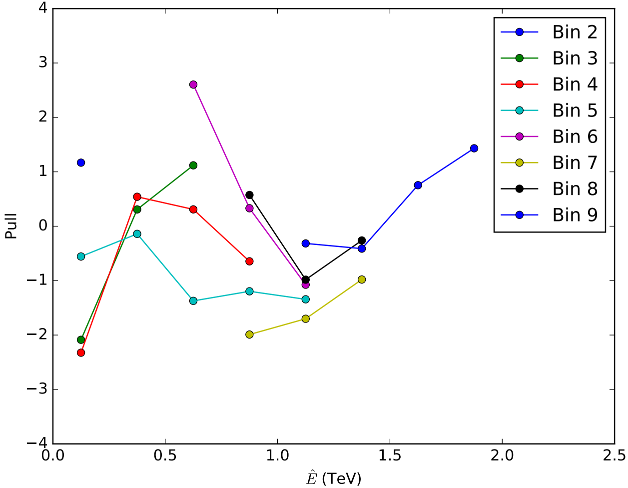
GP with radius = 3.5 × optimal radius

- $p = 0.011$.



GP with radius = 4.0 × optimal radius

- $p = 0.046$.



Conclusions

- NN p-value is poor even with wide bin.
- GP p-value becomes so-so with wide bin.
- NN discrepancy may be driven by data/MC issues with inputs. Will try dropping input variables.