Nuclear Force Imprints Revealed on the Elastic Scattering of Protons with ^{10}C

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1. In fig. 1, what is the purpose of the ionization chamber before target? Why was Ag foil used for the backing of the H_2 target? Why would they use a solid H_2 target?
Anik

2. What is understood as the effective degrees of freedom w.r.t. QCD and Chiral Effective field theory (CEFT)? Why are pions considered in CEFT?
Mamun

3. What is the limitation of chiral perturbation theory? Why would we not just consider the exchange of quarks and gluons instead of pions in strong force?
Mahesh

4. What is the missing mass technique? In fig. 2, what is it meant by 'Excitation energy'? Why is it negative?
Robert

5. Why is there a strong dip in the NN cross-section at $\theta_{cm} \sim 80°$ in fig 3? Does this mean there is a problem with the NN interaction? Does the NN cross section saturate at high θ_{cm}? If so, why?
Bishnu

6. What is phase shift (δ)? How is it calculated? Why are the phase shifts saturating at large $E_{c.m.}$ in fig. 4?
Taya

7. In table 1, why does the theoretical energies and widths not have errors?
Doug

8. How does the chiral N^2LO_{sat} model do with predicting other reactions that have been previously measured? Is the factor of 2.3 needed for other reactions too?
Sudhanva

9. What other experiments have explored ^{10}C and ^{11}N properties? What do we know about ^{10}C and ^{11}N?
Tyler

10. Do the three models i.e. chiral NN, NN+3N400, N^2LO_{sat} predict nuclear properties like radius, binding energy well for other nucleus? If so, which model does a better job?
Matt

11. Have we tested Chiral interaction theory on an easier nucleus like ^{6}He or ^{8}He?
Ibrahim

12. What is missing in the theoretical models that could account for the accuracy (providing explanation of the factor 2.3) between the experimental data and theory?
Cole

13. What other theories exist (if any) that could describe the data besides the ones shown in fig. 3?
Joey

14. Why didn't they use a different kind of interaction like JISP-16 rather than EFT?
Utsav