

Questions regarding the paper “First Observation of the Four-Proton Unbound Nucleus ^{18}Mg “Phys. Rev. Lett. 126, 172502 (2021).

Nuclear Lunch Discussion, 4/06/22, 11:50 AM

1. What are the lifetimes of the states and nuclei involved? How would these be measured? **(Shyam)**
2. How was the ^{18}Mg excited state identified as the first 2^+ excited state? Why does a peak in the trend of the first 2^+ excited state energy, $E(2^+)$, versus nucleon number indicate a magic number? **(Ibrahim Alnamlah)**
3. How was particle identification done for ^{14}O ? **(Justin W.)**
4. What is invariant mass reconstruction and how does it work? **(Josef Foy)**
5. Why is ^{232}U used for calibration, given the reaction does not involve ^{232}U ? What are other ways to calibrate the detectors? **(Joseph Derkin)**
6. Explain more about why the observation of 4P emission is important. **(Pramita)**
7. What is Gamow shell model? **(Mahesh Poudel)**
8. How is the background calculated? Why is the background ignored? **(Brad McClung)**