

Nuclear Lunch Spring '22

¹⁵⁹Dy Electron-Capture: A New Candidate for Neutrino Mass Determination

Questions

In general, how does electron capture happen? How does neutrinoless double beta decay and neutrinoless double electron capture work? Are the electron orbitals of the atoms involved, and if so how and which generally ? **(Joseph D.)**

- 1) How has EC typically been discovered/detected traditionally and in modern experiments? Can these methods be related to any parts of the x-axis variables in Fig 2. **(Gula)**
- 2) How are the EC endpoint measurements using ¹⁶³Ho (proposed and realized) of references [9], especially [11], and [12] cited in the paper, accomplished or how are they proposed to be accomplished. **(Bikash)**
- 3) In general, how does a Penning Trap work? What purpose does it serve for this paper? What makes the equipment and trap used for the measurement in this paper a “double” Penning trap **(Yenuel)**
- 4) What is the difference between the Dirac nature and Majorana nature of the neutrino? **(Alexandra)**
- 5) Briefly summarize how previous experiments or observations have determined the neutrino mass. What makes this current experiment better? **(Nisha)**
- 6) What is Gamow-Teller decay? What is the importance of the decay in this paper? **(Bradley)**