

Nuclear Lunch: October 3, 2018

Decay of the Nuclear Isomer $^{229}\text{Th}(3/2^+, 7.8 \text{ eV})$ in a Dielectric Sphere, Thin Film, and Metal Cavity

Presenter: Abinash

Moderator: Kristyn

Questions:

1. What is meant by a metal stable state? How could something with a half-life of 31 years be considered metastable? **Robert**
2. How does the Purcell Effect work? In this process, do the number of final states change or stay the same to enhance the density of states? **Mahesh**
3. Why use LiSrAlF_6 specifically for the experiment? **Joey**
4. Is the gamma activity for spontaneous decay always exponential? Why exponential and not some other dependence? **Doug**
5. What are the different types of gamma transitions? What physical change in the nucleus do these transitions correspond to? **Kaelyn**
6. Are there other ways to change the decay rate of an element? **Ibrahim**
7. What are the boundary conditions applied to the system? **Yenuel**
8. How does the shape of the cavity affect this experiment and why did they choose a sphere? **Taya**
9. Why is f_{MP} suppressed in the cavity but not in vacuum? **Sudhanva**