

Names: _____

PHYS 7501, FS 2021

Group Activity 7

Due: In class, September 14th

1. Three nuclei have the state energies and J^π below. If nucleus A were able to α -decay to nucleus B, would you expect this to have a shorter or longer half-life than if nucleus A were instead able to α -decay to nucleus C? Why?

Nucleus	Energy [keV]		
	0+ g.s.	1st 2+	1st 4+
A	0	250	500
B	0	500	1000
C	0	250	830

2. What's the kinetic energy of the α emitted from ^{146}Sm ?
3. Assuming a typical value for the α preformation factor and similar assault frequencies and tunneling probabilities, estimate the branching ratio of ^{14}C decay to α decay for ^{222}Ra . Compare this to the decay branching listed by the NNDC.