Names: _____

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Group Activity 5 **Due:** In class, September 12th

1. Estimate the radius of ^{208}Pb by treating its protons as a Fermi gas.
   Compare your answer to the common empirically-based estimate.

2. The ENSDF database shows ^{27}Al has 20 cumulative levels at 6MeV and 60 cumulative levels at 8MeV. How many cumulative levels do you expect by 10MeV?
   Compare to the value quoted on BRUSLIB.

3. You have determined the spins for the excited states of some nucleus using β-decay, which tends to sample a small range of spins. You're now going to use your spin distribution to calculate the level density for the daughter nucleus of a reaction. Would you be more worried about systematic uncertainties if you were doing this for ^{59}Cu(p,γ) for the astrophysical rp-process or for ^{234}U(γ,n) for special nuclear material detection?