Names: _____

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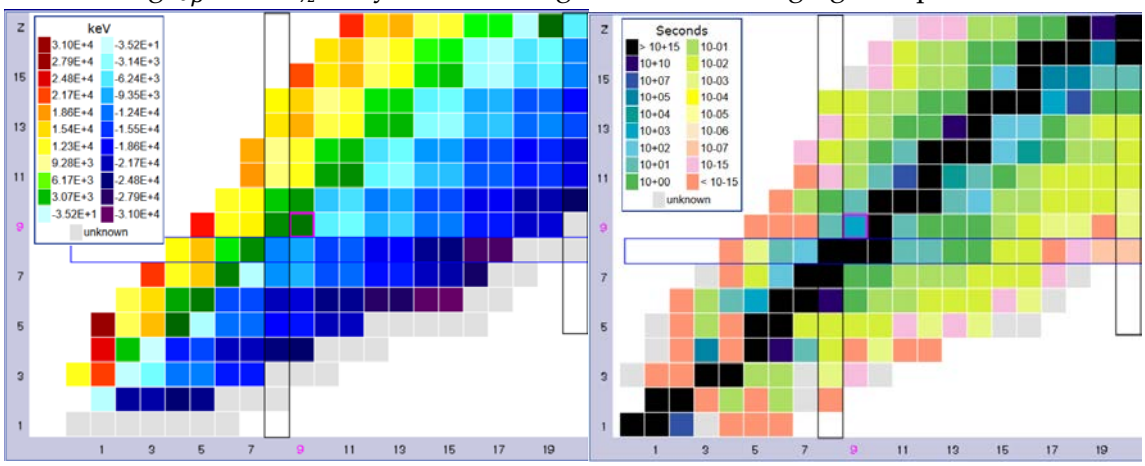
Group Activity 20 **Due:** In class, November 30th

1. Considering $Q_{\beta+}$ and $t_{½}$, why is ^{18}F such a great medical imaging isotope?



2. As you solved in Homework 3, a household smoke detector's activity of ~1μCi from ^{241}Am corresponds to ~0.2μg of material. According to the IAEA, ^{241}Am emits ~3.3 thermal neutrons per neutron-induced fission. The NNDC lists $\sigma_{n_{therm},f}$~3.2b and the density of ^{241}Am is ~12g/cm^3. Considering all of those facts, how many household smoke detectors would you need to amass to achieve criticality?