

Names: \_\_\_\_\_  
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Group Activity 16

Due: In class, November 7<sup>th</sup>

- Suppose we're interested in the statistical properties of <sup>96</sup>Tc. We want to study these at the Edwards Accelerator Laboratory, where we'll choose to stick with  $\alpha$ ,  $p$ , and/or  $d$  beams. What reactions can we use to study <sup>96</sup>Tc level density? For any of these reaction probes, where should we place our detectors and why? Which reaction would be our best bet to determine the level-density and <sup>96</sup>Tc spin-cutoff parameter? Why?

<sup>94</sup> Tc 293 M ε: 100.00%	<sup>95</sup> Tc 20.0 H ε: 100.00%	<sup>96</sup> Tc 4.28 D ε: 100.00%
<sup>93</sup> Mo 4.0E+3 Y ε: 100.00%	<sup>94</sup> Mo STABLE 9.15%	<sup>95</sup> Mo STABLE 15.84%
<sup>92</sup> Nb 3.47E+7 Y ε: 100.00% β- < 0.05%	<sup>93</sup> Nb STABLE 100%	<sup>94</sup> Nb 2.03E+4 Y β-: 100.00%

- How does the required measurement precision change for high-A nuclides (relative to low-A) if we want to determine the spin-cutoff parameter from a measurement of  $\frac{d\sigma}{d\Omega}(\theta)$  using an  $(\alpha, n)$  reaction?