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Static Magnetic and Quadrupole Moments of Excited States of Nuclei[1] SEAN YEAGER, LARRY ZAMICK, YITZHAK SHARON, Rutgers University — The gyromagnetic ratio (g) is the ratio of μ to J. We have noticed that many isoscalar g factors of excited states in both even-even and odd-odd nuclei have values close to 0.5 nuclear magnetons. It should be noted that both the collective model and the single j shell model (in the limit of large orbital angular momentum l) predict this result. We also note the importance of the "l forbidden" $[Y^2\sigma]^1$ term for magnetic moments. For quadrupole moments we define the quadrupole ratio, $\frac{Q_0(S)}{Q_0(B)}$ i.e. the ratio between the intrinsic quadrupole moment deduced from 2^+ states and from $B(E2)_{0\rightarrow 2}$. Ideally, the rotational model predicts a value of one for the quadrupole ratio while the simple vibrational model predicts zero. The poster will show a graph plotting this ratio against mass number. There are small regions where the ratio is close to zero and $\frac{E(4)}{E(2)}$ is close to two. Also, there are regions where the quadrupole ratio is close to one and $\frac{E(4)}{E(2)}$ is close to $\frac{10}{3}$. Yet there are intermediate regions which lie in between these two limits. This theoretical analysis is of relevance to the experimental program of Prof. Noemie Koller at Rutgers University.

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