Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Hyperfine-quenched $2s2p\,^3P_2 - 2s^2\,^1S_0$ M2 transition in Be-like ions[1] K.T. CHENG, M.H. CHEN, Lawrence Livermore National Laboratory, W.R. JOHNSON, U. of Notre Dame — For isotopes with non-zero nuclear spins, the $2s2p\,^3P_2 - 2s^2\,^1S_0$ M2 transition in Be-like ions is affected by hyperfine mixing with the much stronger $2s2p\,^{1,3}P_1 - 2s^2\,^1S_0$ E1 transitions. In this work, these hyperfine-quenched M2 rates are calculated with a large-scale relativistic configuration-interaction method in a perturbative approach that includes coherent hyperfine mixing between the $^3P_1$ and $^1P_1$ states. It is found that the effect of hyperfine quenching is significant and that for some low-Z Be-like ions with $I = 1/2$, the $^3P_2 - {}^1S_0$ transition will show up in measurements as a two-component decay comprising of a slower, unperturbed decay from the $F = J + I = 5/2$ level and a much faster, hyperfine-quenched decay from the $F = J - I = 3/2$ level.

[1]This work was performed under the auspices of the U.S. DOE by the Lawrence Livermore National Laboratory under contract No. DE-AC52-07NA27344.

K. T. Cheng
Lawrence Livermore National Laboratory

Date submitted: 23 Jan 2009 Electronic form version 1.4