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Hyperfine quenching of the $2s^2 2p^5 3s\ ^3P_2$ state of Ne-like ions[1] U. I. SAFRONOVA, A. STAFFORD , A. S. SAFRONOVA, University of Nevada, Reno — The many-body perturbation theory (RMBPT) is used to calculate energies and multipole matrix elements to evaluate hyperfine quenching of the $2s^2 2p^5 3s\ 3P_2$ state in Ne-like ions. In particular, the $^3P_2$ excited state decays to the $^1S_0$ ground state by M2 emission, while both $^1P_1$ and $^3P_1$ states decay to the ground-state by E1 emission, which is substantially faster. For odd-A nuclei, the hyperfine interaction induces admixtures of $^3P_1$ and $^1P_1$ states into the $^3P_2$ state, resulting in an increase of the $^3P_2$ transition rate and a corresponding reduction of the $^3P_2$ lifetime. We consider 22 Ne like ions with Z = 14 - 94 and nuclear moment I =1/2. We found that the largess hyperfine quenching contribution by a factor of 2 are for Ne-like ^{31}P and ^{203}Tl. The smallest (less than 1%) induced contribution are the following Ne-like ions: ^{57}Fe, ^{107}Ag, ^{109}Ag, ^{183}W, and ^{187}Os ions. For another 15 Ne-like ions the hyperfine quenching contribution is between 15% and 35%. Applications to x-ray line polarization of Ne-like lines is considered.

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