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Isospin splitting and quark charge screening effects on M1 decay widths of charm baryons

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In light of the precise experimental measurements of the heavy flavor baryons, we calculate the isospin mass splitting of charm baryons by incorporating isospin symmetry breaking. We obtain the masses of $J^P = \frac{1}{2}^{(\prime)+}$ and $\frac{3}{2}^+$ charm baryons utilizing the effective mass scheme based on single gluon exchange interaction between the spectator quarks inside the baryons. In addition, we analyze the modification of quark charge by employing screening effect caused by the neighboring quarks. Consequently, we obtain the magnetic and transition moments of $J^P = \frac{1}{2}^{(\prime)+}$ and $\frac{3}{2}^+$ baryons to predict radiative M1 decay widths for $\frac{1}{2}^{\prime+} \rightarrow \frac{1}{2}^+$ and $\frac{3}{2}^+ \rightarrow \frac{1}{2}^{(\prime)+}$ transitions.

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