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hyperon weak radiative decays in Light front approach

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Motivated by recent experimental data on $\Sigma^+ \to p\gamma$ at BESIII, we investigate a class of hyperon weak radiative decays.
To estimate these processes, in our research, we employ a new type of light-front quark model with a three-quark picture for octet baryons.
In the three-quark picture, with the use of $SU(3)_f$ and spin symmetries, we present a general form of the light front wave function for each octet baryon.
By including contributions from the penguin diagram and W exchange diagram, we perform a complete calculation on the branching ratios (Br) and the asymmetry parameter (α) for hyperon weak radiative decay processes.
Our results are helpful for discovering additional hyperon weak radiative decay processes in experimental facilities, and our research will promote the theoretical study of baryons.

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