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Productions of sd-shell hypernuclei ${}^{19}_{\Lambda}$F and ${}^{20}_{\Lambda}$Ne in shell-model calculations[1] ATSUSHI UMEYA, Nippon Institute of Technology, TOSHIO MOTOBA, TORU HARADA, Osaka Electro-Communication University — Detailed hypernuclear studies have been mainly focused on structures of s- and p-shell systems. As the next stage of hypernuclear studies, experiments of sd-shell hypernuclei will be carried out at J-PARC. The level structures of sd-shell nuclei are richer and more complex than those of p-shell nuclei. Even the Λ single-particle energies are not well known experimentally, and the theoretical study on the interplay with nuclear core excitations have just started in these medium-mass systems. We anticipate innovated (K^-, π^-) reaction experiments to be done at J-PARC, as well as $(e, e'K^+)$ reaction experiments at JLab and Mainz. In this work, we focus on ${}^{19}_{\Lambda}$F and ${}^{20}_{\Lambda}$Ne hypernuclei and calculate wave functions by using a multi-configuration shell model and the conventional ΛN effective interactions derived from the Nijmegen NSC97f potentials. We estimate production cross sections of (K^-, π^-), (π^+, K^+) and $(e, e'K^+)$ reactions and analyze differences of characteristics between these reactions.

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