Kaon Fragmentation Function from NJL-Jet Model

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The NJL-jet model provides a sound framework for calculating the fragmentation functions in an effective chiral quark theory, where the momentum and isospin sum rules are satisfied without the introduction of ad hoc parameters [1]. Earlier studies of the pion fragmentation functions using the Nambu–Jona-Lasinio (NJL) model within this framework showed good qualitative agreement with the empirical parameterizations. Here we extend the NJL-jet model by including the strange quark. The corrections to the pion fragmentation function and corresponding kaon fragmentation functions are calculated using the elementary quark to quark-meson fragmentation functions from NJL. The results for the kaon fragmentation function exhibit a qualitative agreement with the empirical parameterizations, while the unfavored strange quark fragmentation to pions is shown to be of the same order of magnitude as the unfavored light quark's. The results of these studies are expected to provide important guidance for the analysis of a large variety of semi-inclusive data.

[1] T. Ito et al, Phys. Rev. D **80**, 074008 (2009) [arXiv:0906.5362 [nucl-th]].

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