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Simulation of helicity based background reduction at NA-62

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The NA-62 is a CERN fixed-target experiment upgraded from the NA-48 detector at the Super Proton Synchroton. The main scope of NA-62 is the study of the ultra-rare kaon decays in a higher luminosity context than the E-949 experiment of the C4 beamline (LESB III) at the AGS-Synchrotron (Brookhaven National Laboratory). Since in the Standard Model the branching ratios are almost completely suppressed, it is logical that any New Physics (NP) would show much stronger in this system. In this respect K+ -> pi+ nu, nu_bar is a very interesting candidate given its few-percent branching ratio theoretical uncertainty. From experimental perspective 2nu mass cuts and particle-ID show promise for clean signal selection, however as an orthogonal selection criterion, helicity distribution offers an additional advantage, that we have investigated and report here.

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