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Revisiting K→πa decay

Thursday, 3 June 2021 15:36 (6 minutes)

The theoretical calculation for pseudo–scalars hadronic decays $P \to Ma$, with the Axion-Like-Particle escaping
the detection, is reviewed. While one-loop penguin contributions are usually considered, tree-level processes have
most often been overlooked in literature. Following the Brodsky/Lepage approach the tree-level contribution to the
ALP pseudo–scalar decay is estimated. Assuming generic ALP couplings to SM fermions, the latest NA62 results for
the $K^+ \to \pi^+ a$ decay and the present and future KOTO results for the $K^0 \to \pi^0 a$ decay are used to
study the tree-level vs one-loop interplay and provide updated bounds on the ALP–fermion Lagrangian sector.

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