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Contribution of the eta to a lattice calculation of $K \rightarrow \mu\mu$ decay

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In the lattice calculation of the two-photon contribution to the $K_L \rightarrow \mu^+ \mu^-$ decay amplitude, the unphysical contribution from the η intermediate state appears as a slowly decaying tail which is hard to remove due to the tiny mass difference between the K_L and η . We have developed methods to remove such an unphysical η contribution from our lattice results. In this contribution, we present a preliminary GEVP study of the η and η' masses, with which we determine the relevant matrix elements of η . Different methods to remove the unphysical η contribution from the decay amplitude are examined, giving comparable results.

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