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Unitarity triangles and the lattice

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First, in brief historically important role of the lattice in the confirmation of the KM theory of CP violation via the (Standard or B) unitarity triangle(UT) is recapitulated. We then briefly remark on the current tensions between inclusive and exclusive (i.e. lattice) determinations of V_{xb} that are important for the BUT. Wrt the KUT, special role of ϵ 's is discussed. Furthermore, noting that for the gold plated $K_L \rightarrow \pi^0 \nu \bar{\nu}$ mode, the currently measured upper bound is still about two orders of magnitude above the prediction of the SM, it'd suggest that the experimental measurement of this very important but also very challenging mode is likely over a decade away. That motivates us to make progress in the meantime with very closely related modes $K^0 \rightarrow \pi^0 l^+ l^-$ experimentally, phenomenologically and also via the use of the lattice in order to help improve the constraint on the gold plated mode.

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