



Contribution ID: 244

Type: Poster

2024 Update on ϵ_K with lattice QCD inputs

Tuesday, 30 July 2024 17:15 (1 hour)

We present recent updates for ϵ_K determined directly from the standard model (SM) with lattice QCD inputs such as \hat{B}_K , $|V_{cb}|$, $|V_{us}|$, $|V_{ud}|$, ξ_0 , ξ_2 , ξ_{LD} , f_K , and m_c . We find that the standard model with exclusive $|V_{cb}|$ and other lattice QCD inputs describes only 2/3 of the experimental value of $|\epsilon_K|$ and does not explain its remaining 1/3, which leads to a strong tension in $|\epsilon_K|$ at the 5σ level between the SM theory and experiment. We also find that this tension disappears when we use the inclusive value of $|V_{cb}|$ obtained using the heavy quark expansion based on the QCD sum rule approach.

Primary authors: JWA, Seungyeob (Seoul National University); LEE, Weonjong (Seoul National University)

Co-authors: Mr LIM, Jaehoon (Samsung Electronics); Mr KIM, Jeehun (Seoul National University); Mr KIM, Sunghee (Seoul National University); PARK, Sungwoo (Lawrence Livermore National Laboratory); Mr LEE, Sunkyu (Seoul National University)

Presenter: JWA, Seungyeob (Seoul National University)

Session Classification: Poster session and reception

Track Classification: Particle Physics Beyond the Standard Model