

# Lepton Flavour Universality tests and determination of $V_{us}$ using the tau branching fractions fit

*Friday 19 July 2024 20:40 (20 minutes)*

We update the lepton universality tests and the  $V_{us}$  determination using measurements of tau decays. The tau lepton branching fraction global fit has been improved taking into account uncertainties on external nuisance parameters in its constraints. It will be included in the Heavy Flavour Averaging Group (HFLAV) as-of-2023 report and in the updated Tau Branching Fractions review in the PDG 2024 edition. Lepton universality tests are improved by the Belle II measurement of the tau mass (2023) and the preliminary Belle II measurement of the ratio of the leptonic branching fractions (December 2023).  $V_{us}$  has been determined using the recently published radiative corrections for tau decays and a novel determination of the inclusive hadronic decay rate of the tau to us hadrons with lattice QCD (March 2024).

## I read the instructions above

Yes

## Alternate track

1. Strong Interactions and Hadron Physics

**Author:** LUSIANI, Alberto (Scuola Normale Superiore and INFN, sezione di Pisa)

**Presenter:** LUSIANI, Alberto (Scuola Normale Superiore and INFN, sezione di Pisa)

**Session Classification:** Poster Session 2

**Track Classification:** 05. Quark and Lepton Flavour Physics