CKM unitarity is off by 2.8 σ VC paper

Corrections to the phase space integral *f* (!)
Include a better 'weak charge radius' from isobaric charge radii.

for Holstein's finite-size correction:

$f \propto 1 + q^2 R^2_{\mathrm{ChargedWeak}} \neq q^2 R^2_{\mathrm{Charge}}$

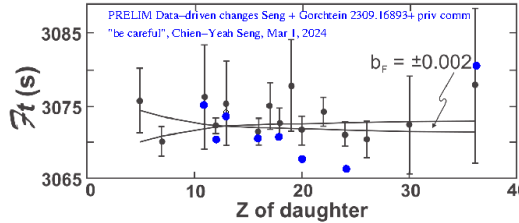
(This is a standard expansion of a pointlike nucleus to include its spatial distribution, related by a Fourier transform to the momentum transfer *q*)

Holstein RMP: One can get $R^2_{\mathrm{ChargedWeak}}$ by comparing isobaric triplets of measured R^2_{Charge}, but no one has done this correctly before.

A related calculation suggests an isospin-breaking test from similar info

(For decays to excited states, δ_{NS} is given by product of GT and M1 matrix elements... driving some M1 experiments, maybe at TRIUMF)

The *F*t values move about this much for the ones that have been measured.



The error on ^{38m}K *ft* also grows by 1.2x.

Seng says if we do ^{38}K isotope shift to 0.3 MHz, (1/20 Γ) he can compare to Ar,Ca and see isospin breaking.

The SMS is likely under control with a benchmarked relativistic CC calculation from Sahoo et al.

We could use $4S \rightarrow 4P$ Γ=6 MHz, or $4S \rightarrow 5P$ Γ= 1.1 MHz. An order better would also need better μonic atom X-rays from the new TRIUMF beamline.

$\langle r^2 \rangle$ ^{37}K and ^{37}Ar are needed for *f*! and maybe for isospin breaking