Does the currently planned configuration of quark-flavor experiments provide enough overlap to assure important results will have confirmation?

IF18:

Is there a target level of precision for the measurement of heavy quark observables?

To what level should such measurements be pursued in the absence of deviations from SM expectations?

Should specific theory models (e.g., SUSY) motivate experimental priorities?

Why have the Japanese and European HEP programs been more supportive of quark-flavor experiments than the U.S. in recent years?

What are the most important quark-flavor measurements to make in the remaining part of this decade?

In the next decade?

If the LHC finds nothing beyond a standard model Higgs, what will it mean for quark-flavor physics?

What should be the balance in the U.S. program between domestic and international facilities?

G3:

How do we ensure a robust program of experiments at different scales?

Should establishing a rare kaon decay program at Fermilab be a priority before the construction of Project-X?

In view of the large cost of energy frontier facilities and the challenges in reaching beyond the few TeV scale for parton interactions, is there reason to believe that flavor-physics experiments may be the most practical way to search for new physics above the few-TeV scale?

Official Tough Questions

IF21:

Describe the increase in sensitivity to new particles in loops as a function of time coming from improved measurements of b->s gamma, B and Bs -> mu mu, and related observables. There should be separate estimates for SUSY models, in which the flavor-changing effects come from loops, and from models in which the flavor-change comes from a tree-level effective operator. This will facilitate plotting this evolution along with the evolution in sensitivity predicted for direct searches for new particles at the LHC.

IF22:

What is the impact of higher precision measurements processes that determine the CKM angles, such as sin 2beta, sin 2 beta_s, and V_{ub}. Can uncertainties be improved sufficiently that tensions between parameters can demonstrate the presence of new physics?

IF23:

What is the impact of measurements of direct CP violation in charm decay on the search for new physics? In what processes is the Standard Model prediction sufficiently well understood, including perturbative and nonperturbative effects, to allow a strong conclusion of a deviation from the Standard Model?

IF19:

If the LHC does not discover new physics, what can be learned from more precise measurements in the quark flavor sector?

What level of precision is desirable for neutron, electron and atomic EDM experiments in this scenario?