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The Future of Quark Flavor Physics

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Quark flavor-physics experiments using large samples of strange, charm, and bottom particles have the ability to probe higher mass scales than are directly accessible in the LHC or any foreseeable collider. This is because high-mass virtual states can affect observable features of the decays of these particles, especially for decay modes that are suppressed in the standard model. With evidence from the LHC of a 125-GeV Higgs boson but no other high-mass states so far, the motivation for a vigorous program of quark flavor-physics experiments is as strong as ever. Indeed, if the LHC finds new high-mass states, results from these experiments may help to identify their source, and if there is no new physics to be discovered at LHC energies, flavor-physics experiments (including lepton flavor) may be the only practical means of accessing the scale of new physics. This talk will describe the next generation of quark flavor-physics experiments and will emphasize the importance of a broad program. It will also discuss work underway, within the venue of the DPF's Snowmass process, to map out the future U.S. program in quark-flavor physics.