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Precision Measurement of K+ -> pi+ nu anti-nu at Fermilab

The K+ -> pi+ nu anti-nu process is both highly suppressed and calculable with high accuracy within the Standard Model. The rate of this process is consequently sensitive to most new physics scenarios beyond the Standard Model. A precision measurement of K+ -> pi+ nu anti-nu would be one of the more incisive probes of quark flavor physics this decade. The experimental challenge to date of measuring K+ -> pi+ nu anti-nu is from the 8 in 100-billion Standard Model rate. Several candidate events of the K+ -> pi+ nu anti-nu process have been observed using the full resources of the AGS accelerator at BNL. CERN is now actively pursuing a 100-event (Standard Model) sensitivity experiment using a new technique driven by the SPS. Operating the Fermilab Tevatron after Run-II as a 150 GeV high-duty factor synchrotron "Stretcher"offers the opportunity to mount a 1000-event experiment based on the techniques developed and demonstrated at the BNL AGS. The Tevatron Stretcher would be a unique facility that would provide nearly ideal properties for rare-decay experiments, allowing the demonstrated performance of the AGS experiment to be extrapolated with confidence to an experiment driven by the Tevatron Stretcher at Fermilab. A proposal (Fermilab P996) submitted to Fermilab has received strong scientific support, and the P996 collaboration is now working with US funding agencies. The status and prospects of the P996 initiative will be presented and discussed.

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