This is still not completely understood.

In the late 1960s Kycia embarked on landmark studies of rare kaon decays. At the end of the 1970s he led a series of clarifying experiments to check predictions of various new particles and/or claims of discoveries, and in the mid-1980s he returned to rare kaon decays as one of the initiators of AGS Experiment 787, the search for the decay of a charged kaon into a pion and two neutrinos. This process is highly sensitive to the otherwise elusive coupling of the top to the downs quark, as well as to many varieties of possible new interactions. Kycia’s vision for that experiment was to design a detector capable of detecting this process at the Standard Model level, which at the time of the proposal was some four orders of magnitude beyond what had been achieved. After many years this decay mode was discovered by E787, opening up a new window into short-distance physics. This work continues.

At the time of his death, Kycia was working on a new experiment to make a precise measurement of the Cabibbo angle, one of the fundamental parameters of the Standard Model.

Kycia was a leader in the design of Cerenkov counters, especially with gas radiators, for particle identification. He built several of these, impressing his colleagues with their performance, but unfortunately rarely describing them in print. At Fermilab, one of his counters cleanly separated pions and kaons at 340 GeV; a few years later, others made modifications and achieved pion–kaon separation at 530 GeV. This is a record that is unlikely to be exceeded at any time in the foreseeable future.

Ted Kycia’s expertise was in the design, planning and execution of particle physics experiments, and he had an impressive record of obtaining correct and accurate results. We and many of our colleagues learned much through working with him.

Roy Rubinstein, Fermilab, and Kelvin Li and Laurence Littenberg, Brookhaven.