

An important factor in this growing conviction was the addition of a special muon detection system to the detector, Fig. 5a, called the muon tower. This addition was conceived and built by Gary Feldman. Although we did not use events such as that in Fig. 5b in our first publication, seeing a few events like this was enormously comforting.

Finally in December 1975, the Mark I experimenters published Perl *et al.*³⁵ entitled "Evidence for Anomalous Lepton Production in $e^+ - e^-$ Annihilation". The final paragraph read:

"We conclude that the signature $e - \mu$ events cannot be explained either by the production and decay of any presently known particles or as coming from any of the well-understood interactions which can conventionally lead to an e and a μ in the final state. A possible explanation for these events is the production and decay of a pair of new particles, each having a mass in the range of 1.6 to 2.0 GeV/c²."

We were not yet prepared to claim that we had found a new charged lepton, but we were prepared to claim that we had found something new. To accentuate our uncertainty I denoted the new particle by U for unknown in some of our 1975-1977 papers. The name τ came later. Incidentally, τ was suggested to me by Petros Rapidis who was then a graduate student and worked with me in the early 1970's on the $e - \mu$ problem (Perl and Rapidis³⁶). The letter τ is from Greek *τρίτου* for third - the third charged lepton.

Thus in 1975, twelve years after we began our lepton physics studies at SLAC, these studies finally bore fruit. But we still had to convince the world that the $e\mu$ events were significant and we had to convince ourselves that the $e\mu$ events came from the decay of a pair of heavy leptons.