Detection of τ

If the τ meson decays into 3π, as

$$\tau^+ \to \pi^+ + \pi^- + \pi^+,$$

it is possible to detect the ~~[illegible]~~ τ^+, when it stops in matter, electronically. The sequency of the events will be: T[illegible], in a big scintillation counter in which the τ stops:

a) "Time 0": Pulse due to stopping of τ, kinetic energy of π's, may be stars due to negative π.

b) Time within few 10^{-8} sec: 2 independent pulses due to the $\pi-\mu$ decay

c) Time within few μs; 2 independent pulses due to the $\mu - e$ decay.

The two pulses delayed few 10^{-8} can be photographed, while the two e decay can be detected electronically.

It is necessary a fast oscillo[s]cope.

τ^+

On the transformations of mesons

The τ meson has a long life $\gtrsim 10^{-9}$ sec, and is supposed to decay into $\pi^+ + \pi^- + \pi^+$. If this is so, it must be concluded that τ does not interact with nuclei, because, if the τ interacts with nucleons, then the rate of the ~~reaction~~ disintegration would be very fast. (through the interaction with nucleons of the "vacuum")

Let us suppose that it does not interact strongly. Since it is strongly produced, it must produced as a decay product of a strongly interacting meson $\mathcal{M}$. But this $\mathcal{M}$ then would decay into π quicker than [illegible]. So there is a contradiction between the existence of a strong interacting particle, and its long lifetime. This contradiction, of course, is resolved if the strongly interacting particle is produced in pair. So from the very fact that a) τ mesons have a long life, ~~it can be~~ and b) ~~that~~ they are present in abundance, we can conclude that there are ~~[illegible]~~ mesons (not necessary the τ mesons) which are strongly produced in pairs.

Incidentally these considerations explain the fact that until [illegible] [illegible]

A consistent picture until now would be:

$\mu \to e + 2\nu$

$\pi \to \mu + \nu$

$$\tau^+ = K = V^+ \longrightarrow \begin{cases} \mu + 2\nu \\ \mu^+ + \pi^+ + \pi^- \\ \mu^+ + \pi^0 \ ? \end{cases}$$

[illegible] no other mesons that π mesons have been produced.

~~[illegible]~~ — ~~The [illegible]~~

$V_{0\,light} \Rightarrow \pi^- + \mu^+$ or $\pi^+ + \mu^-$?

$V_{0\,heavy} \Rightarrow p + \pi^-$

$$\mu \to e + \nu + \nu$$