

Richard Dalitz (1925-2006)



Landmarks of Richard Dalitz work

Australian origin

1946 Cambridge, Bristol

cosmic rays, pion, strange particles

1949 Birmingham (R. Peierls group)

1951 Dalitz pairs $\pi^0 \rightarrow \gamma e^+ e^-$

1954-56

θ - τ puzzle $\theta \rightarrow 2\pi, \tau \rightarrow 3\pi$

"Phase space plot" to study $\tau \rightarrow 3\pi$

Dalitz conjectures that maybe there is P violation

Lee and Yang (1956)

1953 Cornell

1956 Enrico Fermi Institute, Chicago

1963 Oxford University

Just after Gell-Mann "quarks"

1965 Dalitz initiates and develops hadron quark model spectroscopy that pursues for decades (the quarks as real particles)

Castillejo-Dalitz-Dyson (CDD) poles

(ambiguity of solution of partial wave

dispersion equations looking for resonances)

Important work on hypernuclei

Question of Parity Conservation in Weak Interactions*

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The question of parity conservation in β decays and in hyperon and meson decays is examined. Possible experiments are suggested which might test parity conservation in these interactions.

RECENT experimental data indicate closely identical masses¹ and lifetimes² of the θ^+ ($\equiv K_{\pi^2}^+$) and the τ^+ ($\equiv K_{\pi^3}^+$) mesons. On the other hand, analyses³ of the decay products of τ^+ strongly suggest on the grounds of angular momentum and parity conservation that the τ^+ and θ^+ are not the same particle. This poses a rather puzzling situation that has been extensively discussed.⁴

One way out of the difficulty is to assume that parity is not strictly conserved, so that θ^+ and τ^+ are two different decay modes of the same particle, which necessarily has a single mass value and a single lifetime.

¹ Whitehead, Stork, Perkins, Peterson, and Birge, *Bull. Am. Phys. Soc. Ser. II*, **1**, 184 (1956); Barkas, Heckman, and Smith, *Bull. Am. Phys. Soc. Ser. II*, **1**, 184 (1956).

² Harris, Orear, and Taylor, *Phys. Rev.* **100**, 932 (1955); V. Fitch and K. Motley, *Phys. Rev.* **101**, 496 (1956); Alvarez, Crawford, Good, and Stevenson, *Phys. Rev.* **101**, 503 (1956).

³ R. Dalitz, *Phil. Mag.* **44**, 1068 (1953); E. Fabri, *Nuovo cimento* **11**, 479 (1954). See Orear, Harris, and Taylor [*Phys. Rev.* **102**, 1676 (1956)] for recent experimental results.

⁴ See, e.g., *Report of the Sixth Annual Rochester Conference on High Energy Physics* (Interscience Publishers, Inc., New York, to be published).