

"Ideas that worked, ideas that failed,
and ideas that survived"

1. Three stages and three modes

2. Main topics

New theories w/o. new entities,
and their incarnations

a. The puzzle of the mesotron

b. The self-energy problem

年代	エネルギー		
1930	1 Mev	neutron μ π Strange 粒子	サイクロトロン 場理論 2-中子論 くりこみ理論
1960	1 Gev	ハドロンスペクトル	SU(3)対称性 <u>クォーク模型</u> 電磁統一理論 QCD
1970	10 Gev	第2, 3世代	<u>標準理論</u> 大統一理論 超対称性
1980	100 Gev		superstring
	1000 Gev		
2000			

2100

Planck
energy

a) The π - μ puzzle

2-meson theory vs. Strong coupling meson theory

1943 坂田・井上

$\pi \rightarrow \mu$
spin 0 $\frac{1}{2}$

1943 谷川・中村

spin 1 0

Marshak-Bethe

spin $\frac{1}{2}$ 0

Wentzel

Heitler

Pauli

Oppenheimer.

Schwinger

朝永



(Reincarnation)

Skyrmion

b) Self-energy problem

Lorentz 189?

$$m_e c^2 = \frac{e^2}{r_e}$$

Weisskopf 1936(?)

$$\delta m_e \propto m_e e^2 \ln\left(\frac{\Lambda}{m_e}\right)$$

くりしめ理論 vs. 実体論

朝永 1943—

坂田 C-meson

Schwinger) 1947

Pais f-meson

Feynman

$$f^2 = 2e^2$$



(Reincarnation)

SUSY

top quark
condensation

Good ideas never die.
(They keep coming back.)

Old soldiers never die,
They just fade away
...

(General MacArthur)