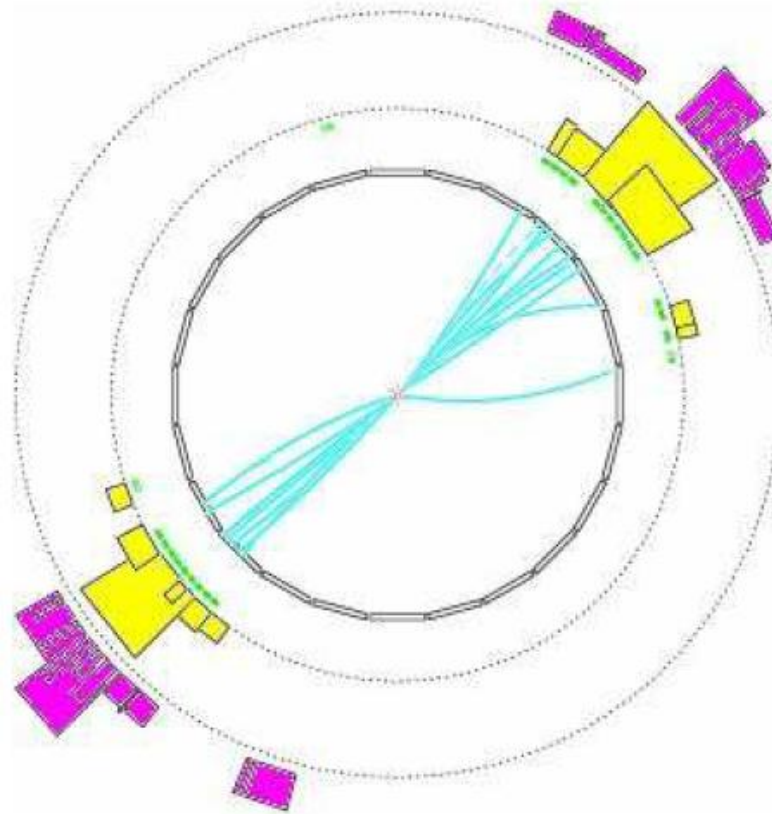


e^+e^- Annihilation in Hadronen: 2-Jet Ereignis



OPAL (LEP)

Definition:

$$R_{had} = \frac{\sigma(ee \rightarrow hadrons)}{\sigma(ee \rightarrow \mu\mu)} = 3 \cdot \sum_i Q_i^2$$

\sqrt{s}	Quarks	$R_{had} = 3 \cdot \sum_i Q_i^2$
$< \sim 3 \text{ GeV}$	uds	$3 \cdot 6/9 = 2.00$
$< \sim 10 \text{ GeV}$	udsc	$3 \cdot 10/9 = 3.33$
$< \sim 350 \text{ GeV}$	udscb	$3 \cdot 11/9 = 3.67$
$> \sim 350 \text{ GeV}$	udscbt	$3 \cdot 15/9 = 5.00$

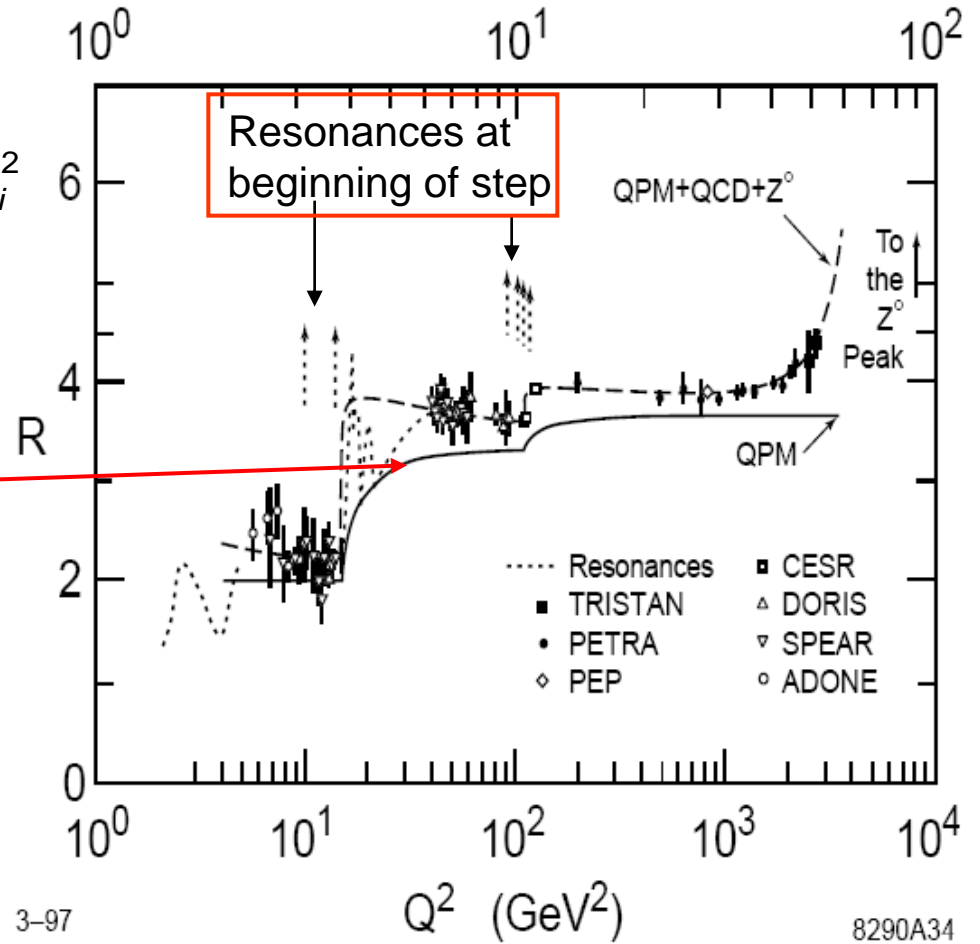
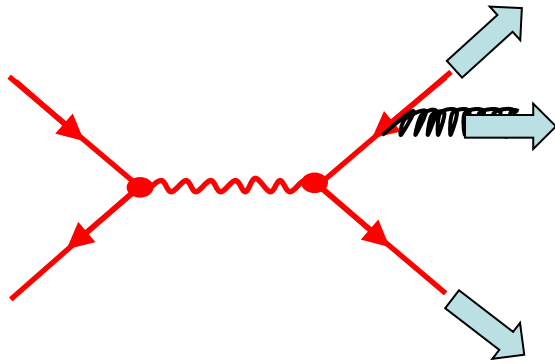


Fig-TP-5.2

Entdeckung der 3-Jet Ereignisse

TASSO Kollaboration am e^+e^-
Beschleuniger PETRA / DESY (1977):



bei $\sqrt{s}=20$ GeV

$$\frac{\text{\#3 - jet events}}{\text{\#2 - jet events}} \approx 0.25$$

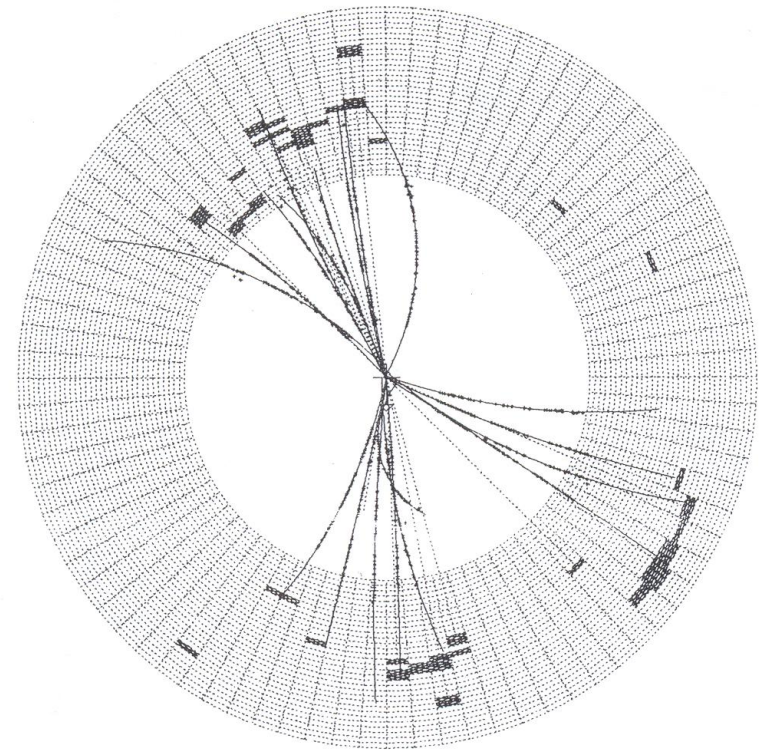


Fig. 11.12 A three-jet event observed by the JADE detector at PETRA.

Laufende Kopplungskonstante $\alpha_s(Q^2)$

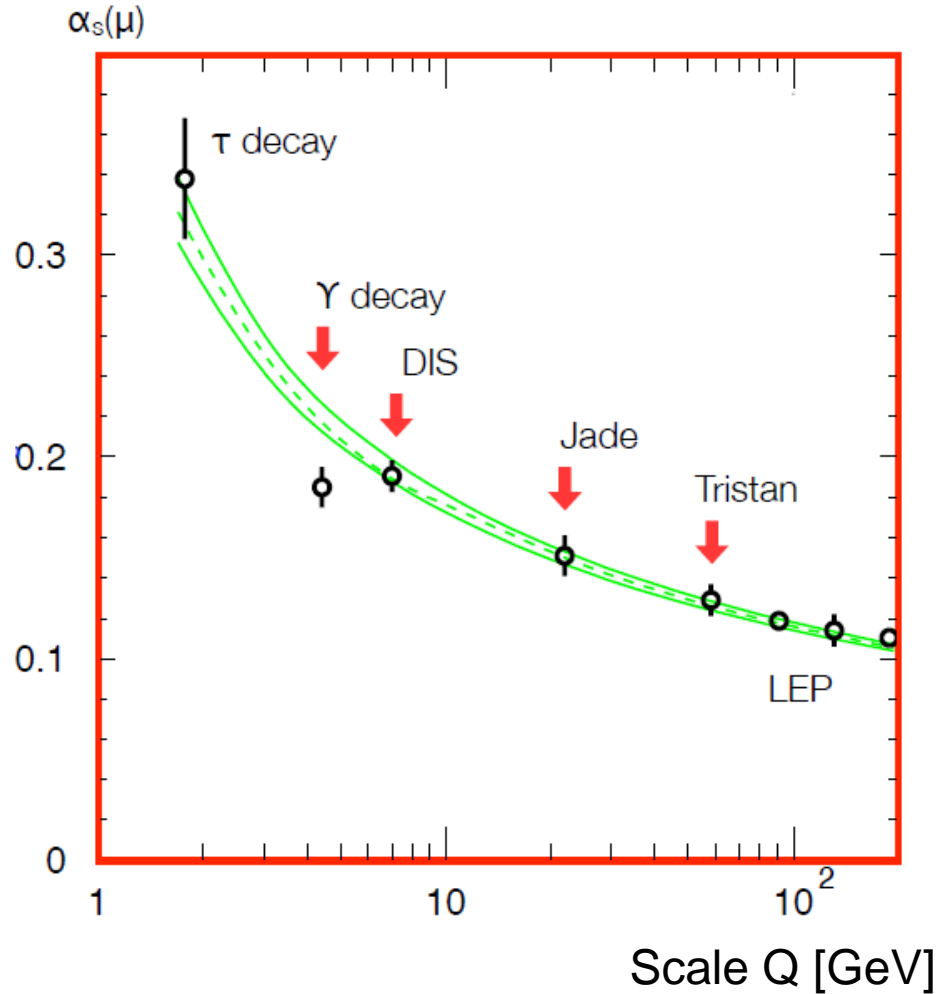


Fig-TP-5.4

Vergleich: Charmonium und Positronium

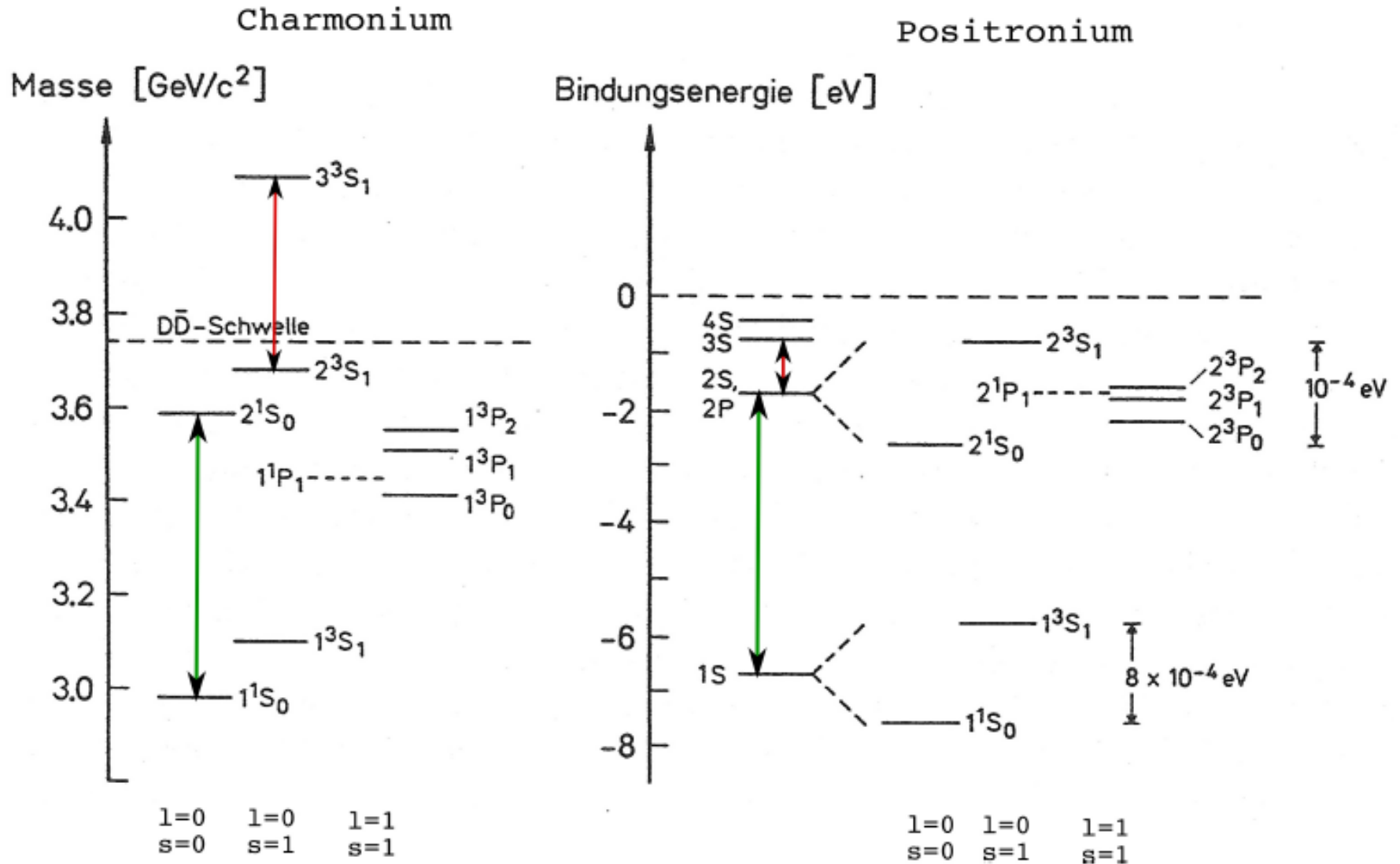


Fig-TP-5.5

Charmonium-Zustände

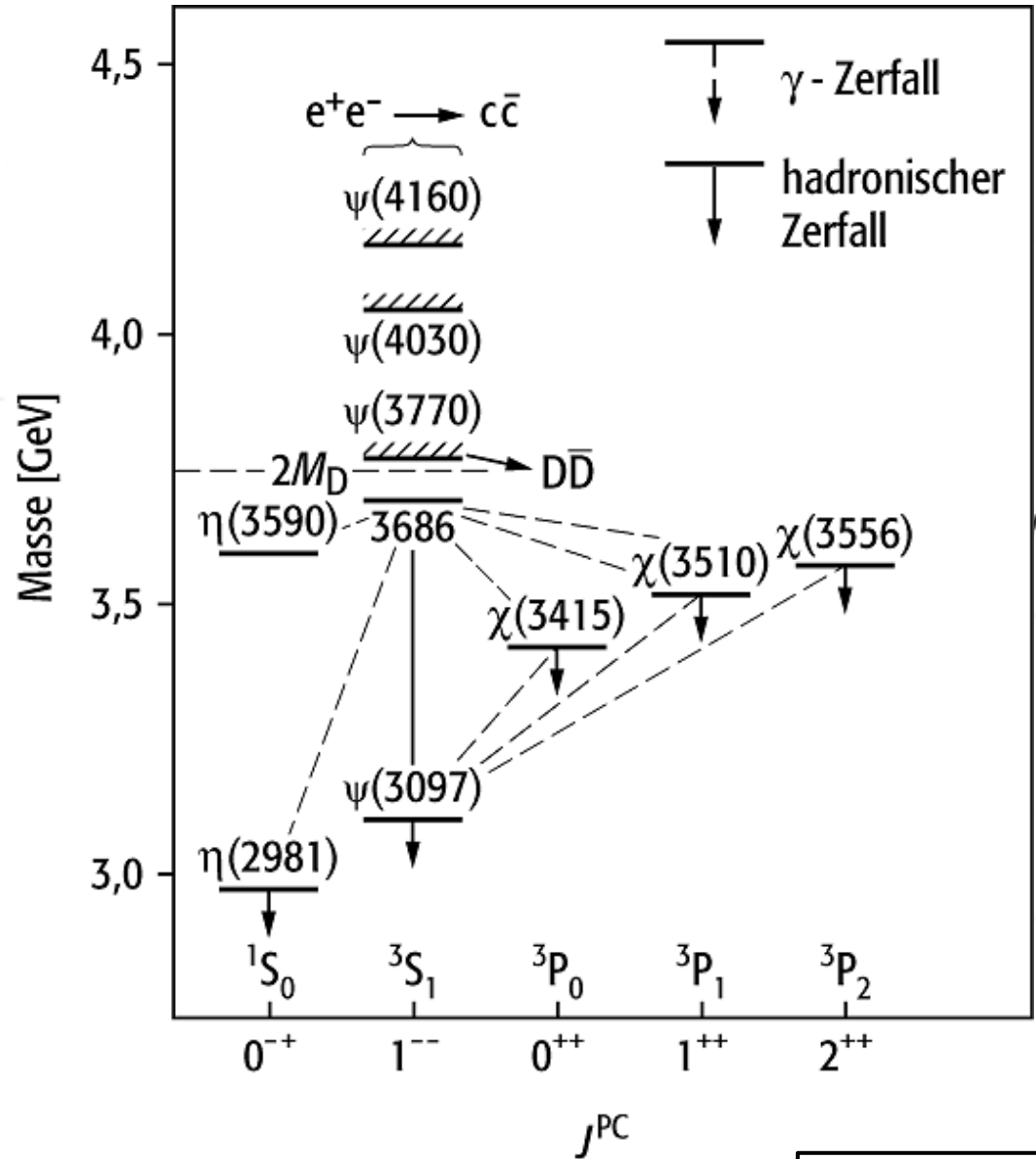
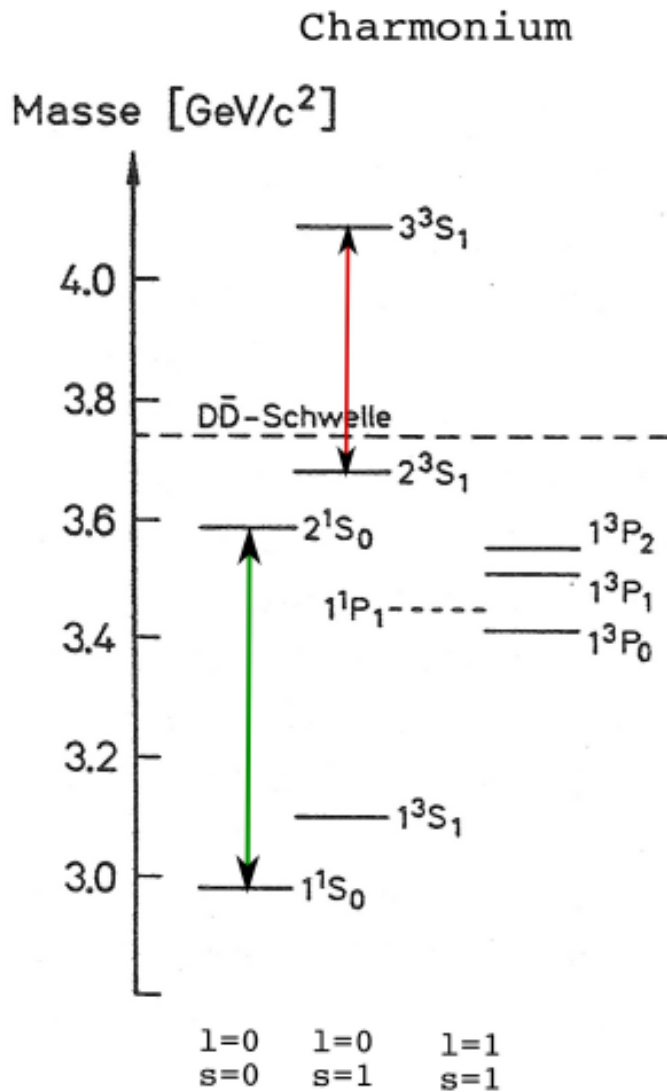


Fig-TP-5.6