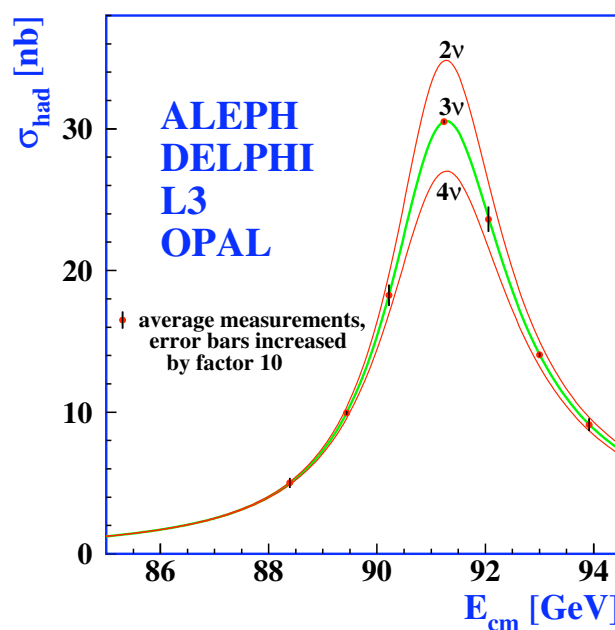


Experimentelle Elementarteilchenphysik

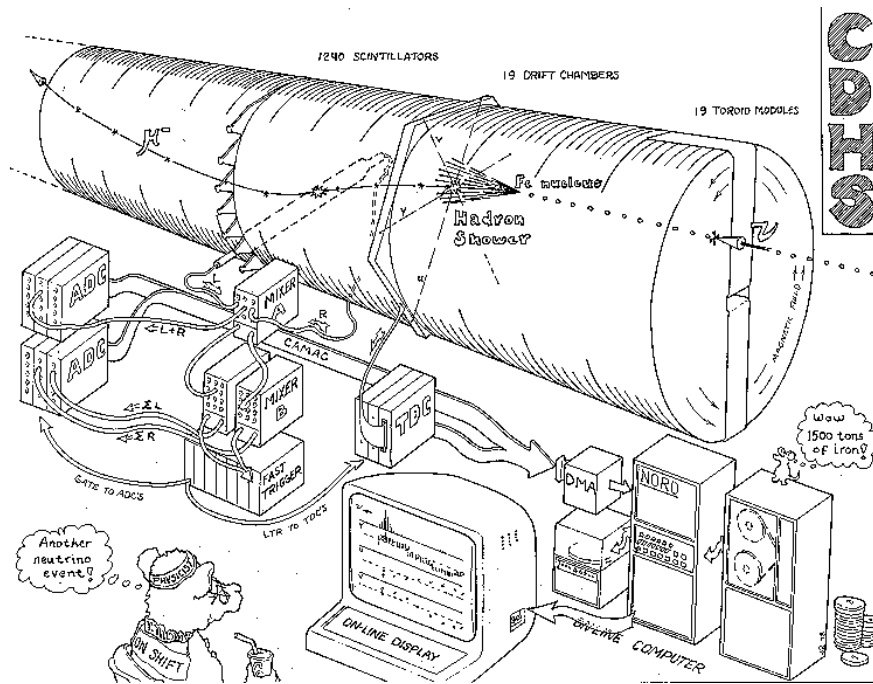
Ulrich Husemann
Humboldt-Universität zu Berlin
Sommersemester 2009

Zahl der leichten Neutrinos



[ALEPH, DELPHI, L3, OPAL, SLD, Phys. Rept. **427** (2006), 257]

Neutrino-Elektron-Streuung

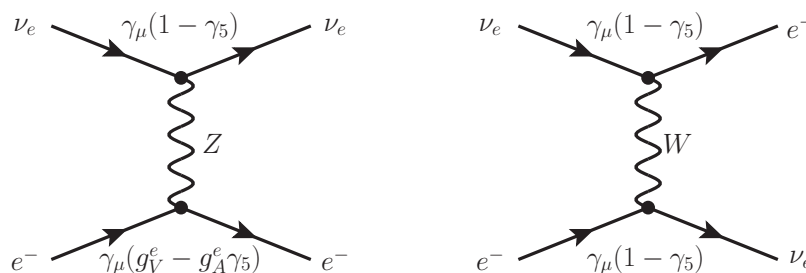


Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 3

Neutrino-Elektron-Streuung

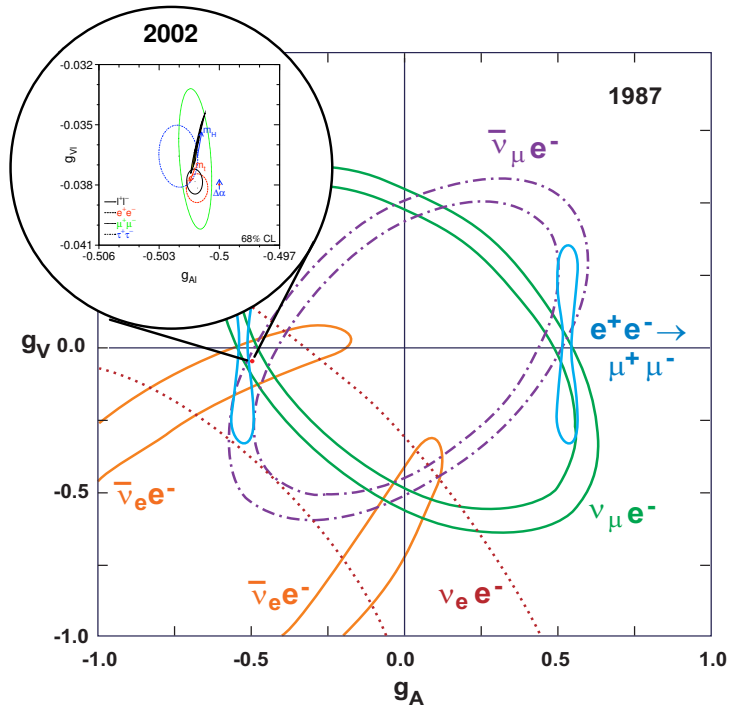
$$\begin{aligned} \nu_\mu e^- \rightarrow \nu_\mu e^- : \quad \sigma &= \frac{G_F^2 s}{3\pi} [(g_V^e)^2 + g_V^e g_A^e + (g_A^e)^2] \\ \bar{\nu}_\mu e^- \rightarrow \bar{\nu}_\mu e^- : \quad \sigma &= \frac{G_F^2 s}{3\pi} [(g_V^e)^2 - g_V^e g_A^e + (g_A^e)^2] \\ \nu_e e^- \rightarrow \nu_e e^- : \quad \sigma &= \frac{G_F^2 s}{3\pi} [(g_V^e + 1)^2 + (g_V^e + 1)(g_A^e + 1) + (g_A^e + 1)^2] \\ \bar{\nu}_e e^- \rightarrow \bar{\nu}_e e^- : \quad \sigma &= \frac{G_F^2 s}{3\pi} [(g_V^e + 1)^2 - (g_V^e + 1)(g_A^e + 1) + (g_A^e + 1)^2] \end{aligned}$$

● Beispiel: $\nu_e e^- \rightarrow \nu_e e^-$



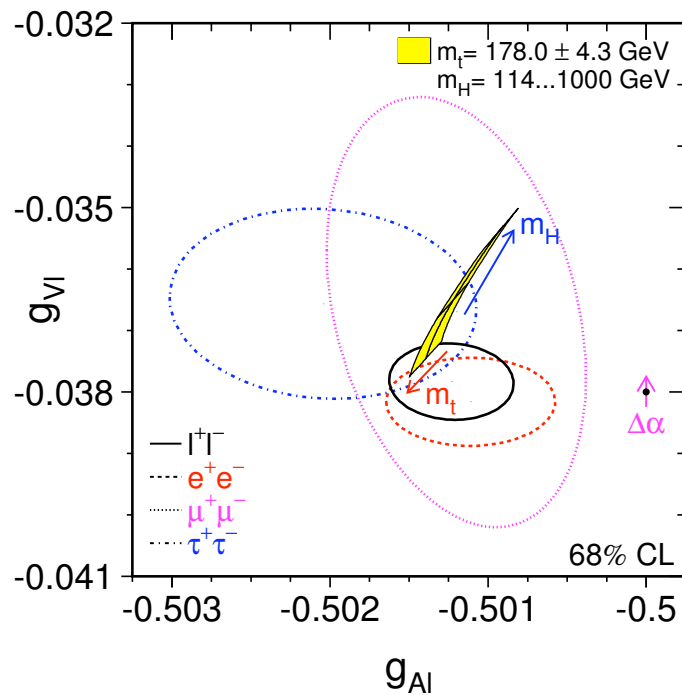
Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 4

g_V und g_A vor LEP



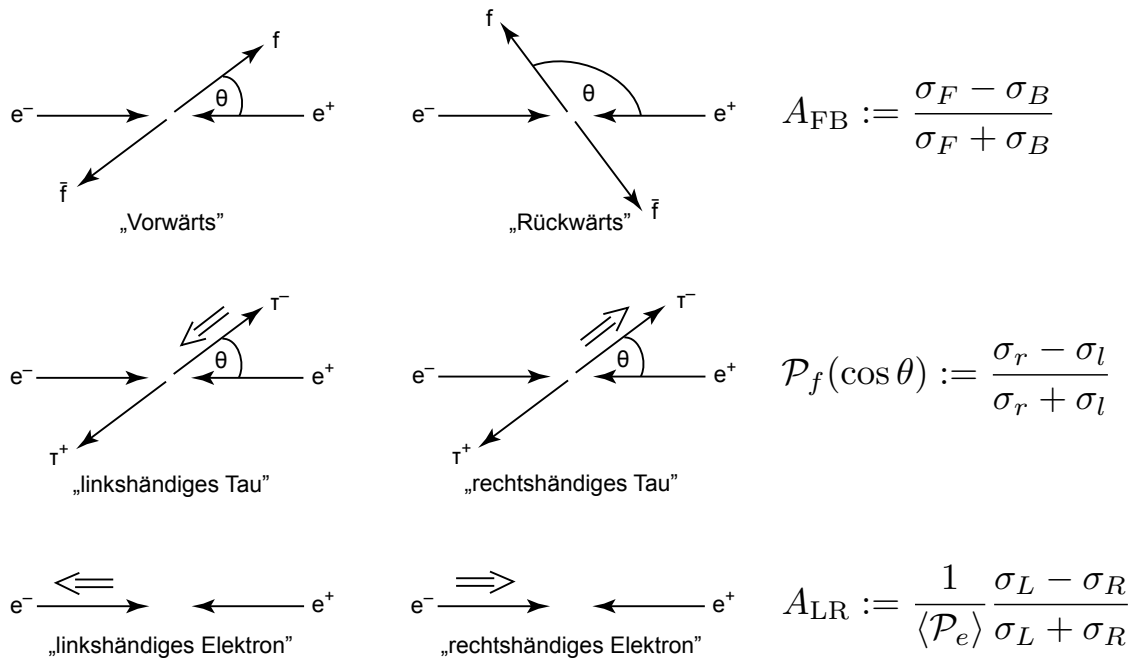
Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 5

g_V und g_A nach LEP



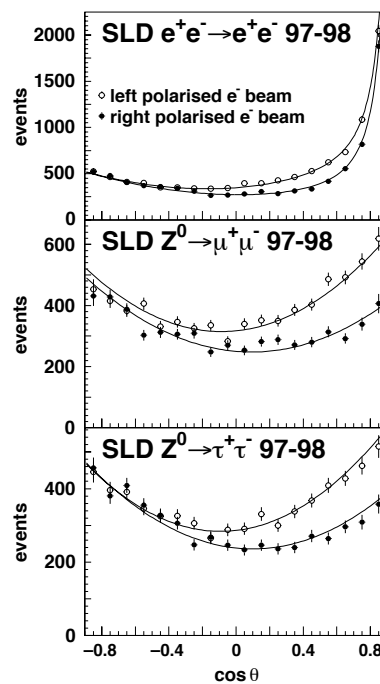
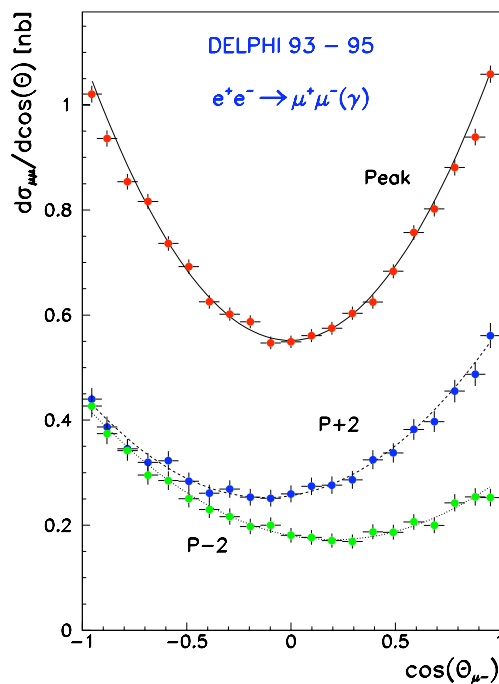
Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 6

Übersicht: Asymmetrien



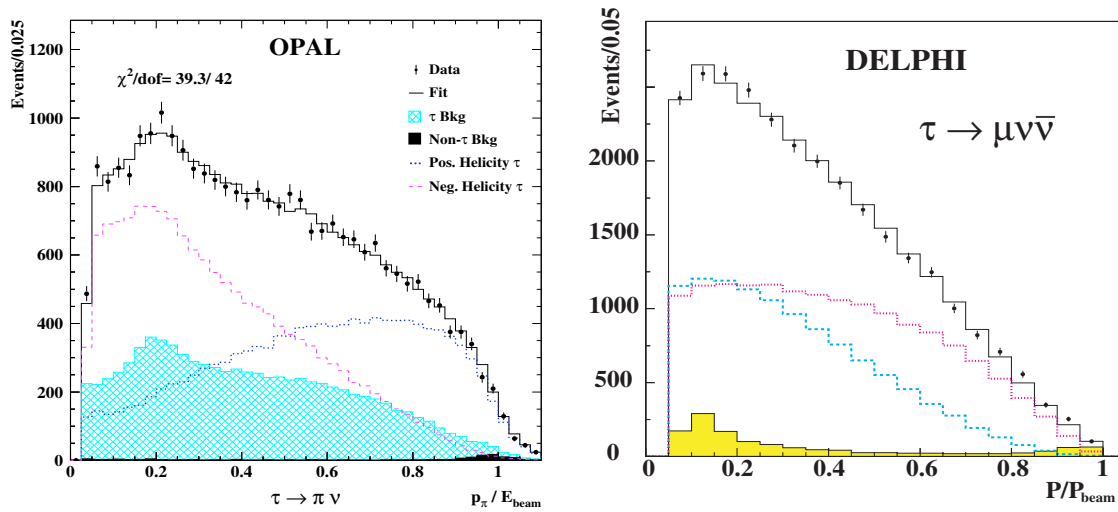
Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 7

Winkelverteilungen: LEP & SLD



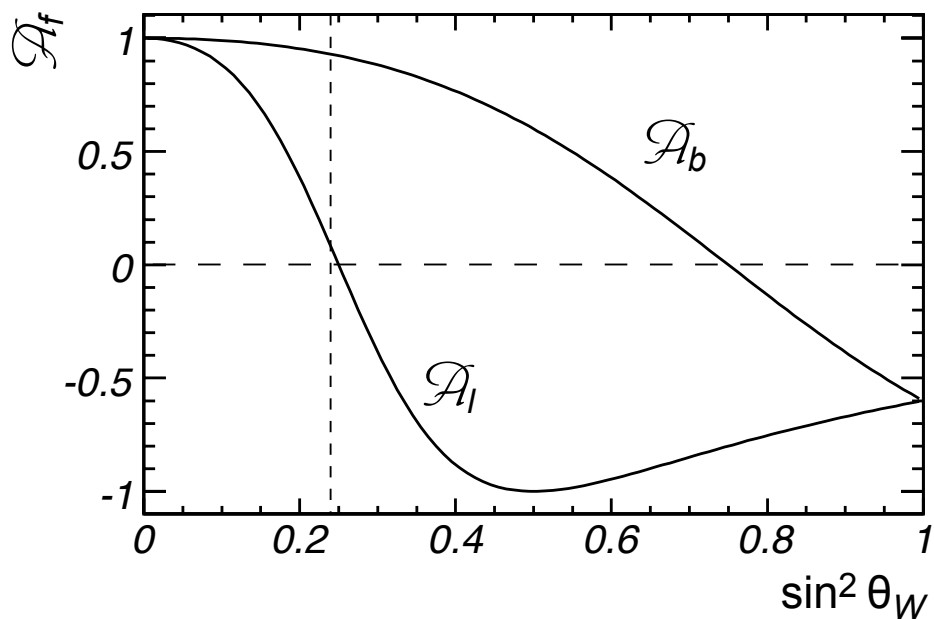
Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 8

Tau-Polarisation in $e^+e^- \rightarrow \tau^+\tau^-$



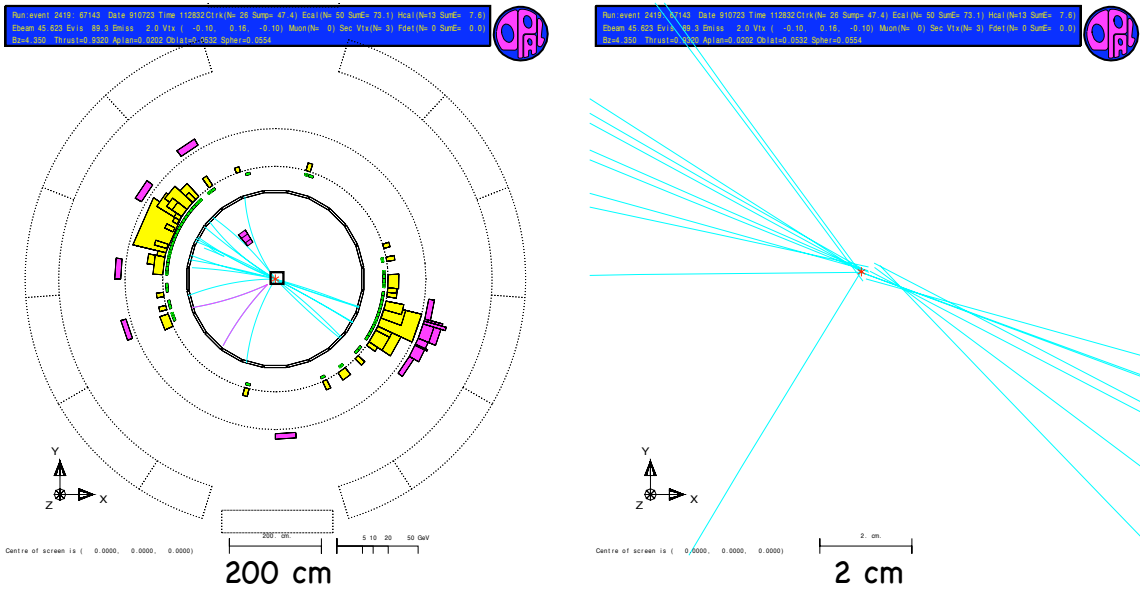
Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 9

Schwacher Mischungswinkel

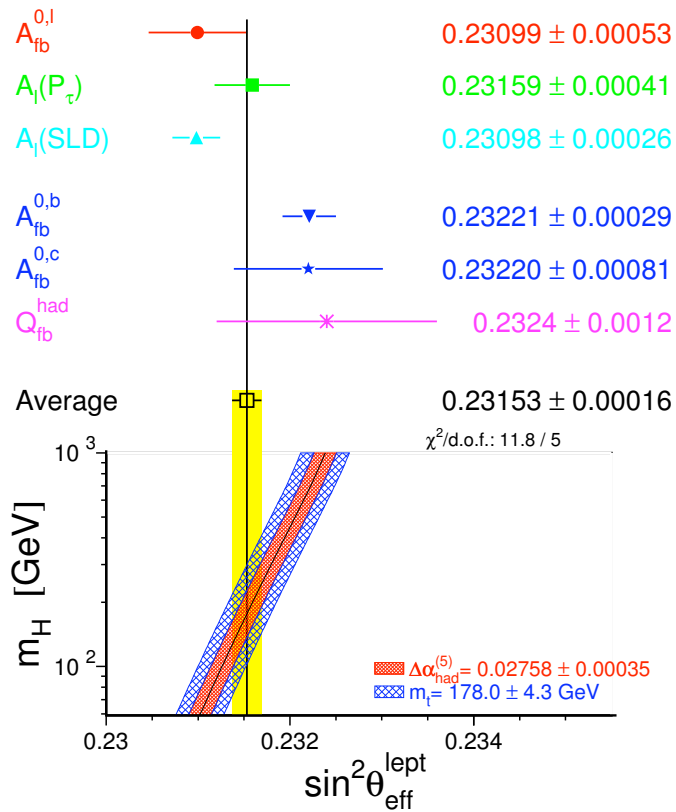


Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 10

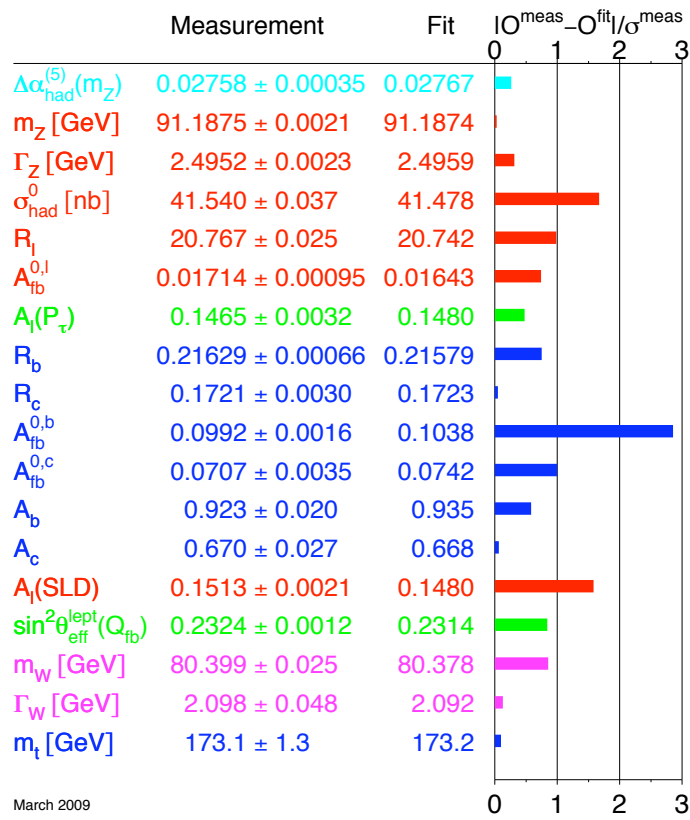
B-Tagging mit Sekundärvertex



Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 11



Exp. Elementarteilchenphysik (P23.1.1), HU Berlin, Sommersemester 2009, 6. Vorlesung 12



March 2009