A_c measurement with Charmed Mesons

3/3/00

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(Will) update A_c value

1. $b \to D$ asymmetry

2. using the latest P_e, A_e values

1. $b \to D$ Asymmetry

$$A_b^D = A_b \times (1 - 2\chi_{mix}) \times (1 - 2\chi_{W \to cs})$$

	OLD	NEW
A_b	0.935 ± 0.105	0.935 ± 0.068 *
χ_d	0.16 ± 0.025 (CLEO 89)	0.156 ± 0.024 (PDG Av. 98*)
$\bar{\chi}$	0.12 ± 0.01 (LEP 94)	0.119 ± 0.005 (LEP 99)
$\chi_{W \to cs}$	0.025 ± 0.025 (OPAL 93)	same
A_b^D	0.64 ± 0.11	0.64 ± 0.07

(*) LEP + SLD (99) 0.867 ± 0.035

SM $\begin{cases} 0.935 \\ \to \text{Take the difference as an error} \end{cases}$

If we use

$$A_b^D = 0.64 \pm 0.07$$

instead of

$$0.64 \pm 0.11$$

We get A_c values as:

$$A_c = 0.690 \pm 0.042 \pm 0.021 \quad \text{: Exclusive}$$
(22) old

$$0.683 \pm 0.052 \pm 0.049 \quad \text{: Inclusive}$$
(50) old

$\longrightarrow$ combine

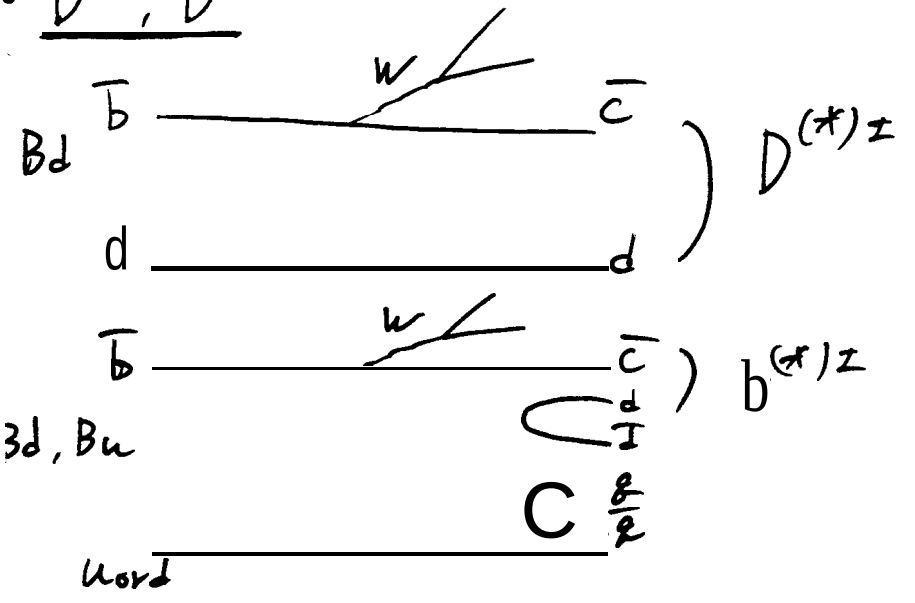
$$0.688 \pm 0.035 \pm 0.023$$
(25) old

To obtain χ_{mix}, so far we assume

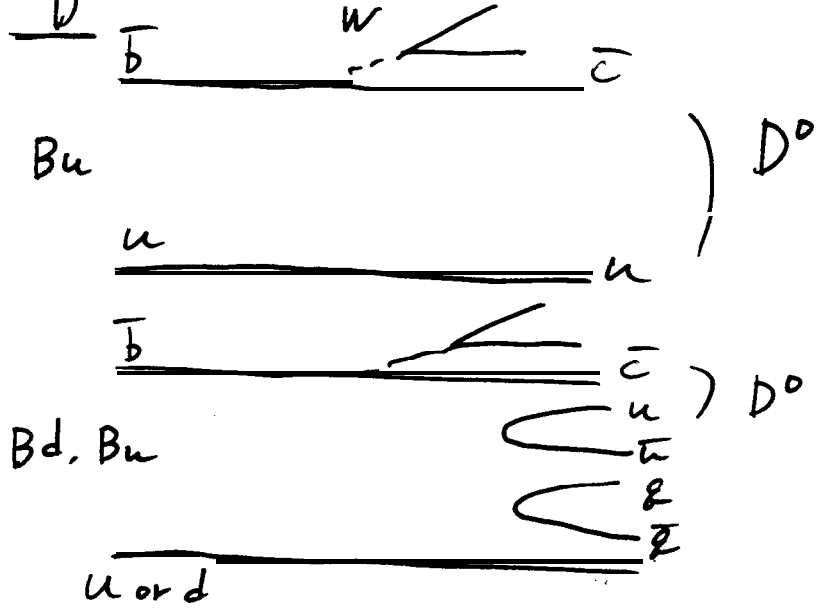
$$\chi_{mix} = 0.5\,\chi_d + 0.5\,\bar{\chi}$$

↳ is this correct?

- $D^{*\pm}, D^{\pm}$



- D^0



Using MC (b-quark ps. JETSET 7.4
300 k event)

$D^{*\pm}$: $0.66\ \bar{\chi} + 0.34\ \chi_d$

$D^{\pm}$: $0.63\ \bar{\chi} + 0.37\ \chi_d$

D^{0} : $0.61\ \bar{\chi}$

Measurement of A_b^D with exp/MC data

To check the A_b^D value, I measured A_b^D with D^* from b- decay

Exp : '96 - '98

MC : '97 - '98 ← correct $B \to D\bar{D}$ value

	MC	Exp.
$x_D > 0.2$	0.483 ± 0.026	0.490 ± 0.074
0.25	0.487 ± 0.030	0.497 ± 0.071
0.3	0.511 ± 0.034	0.572 ± 0.081
0.35	0.500 ± 0.041	0.576 ± 0.104
0.4	0.514 ± 0.047	0.508 ± 0.119