Heavy-light meson spectrum
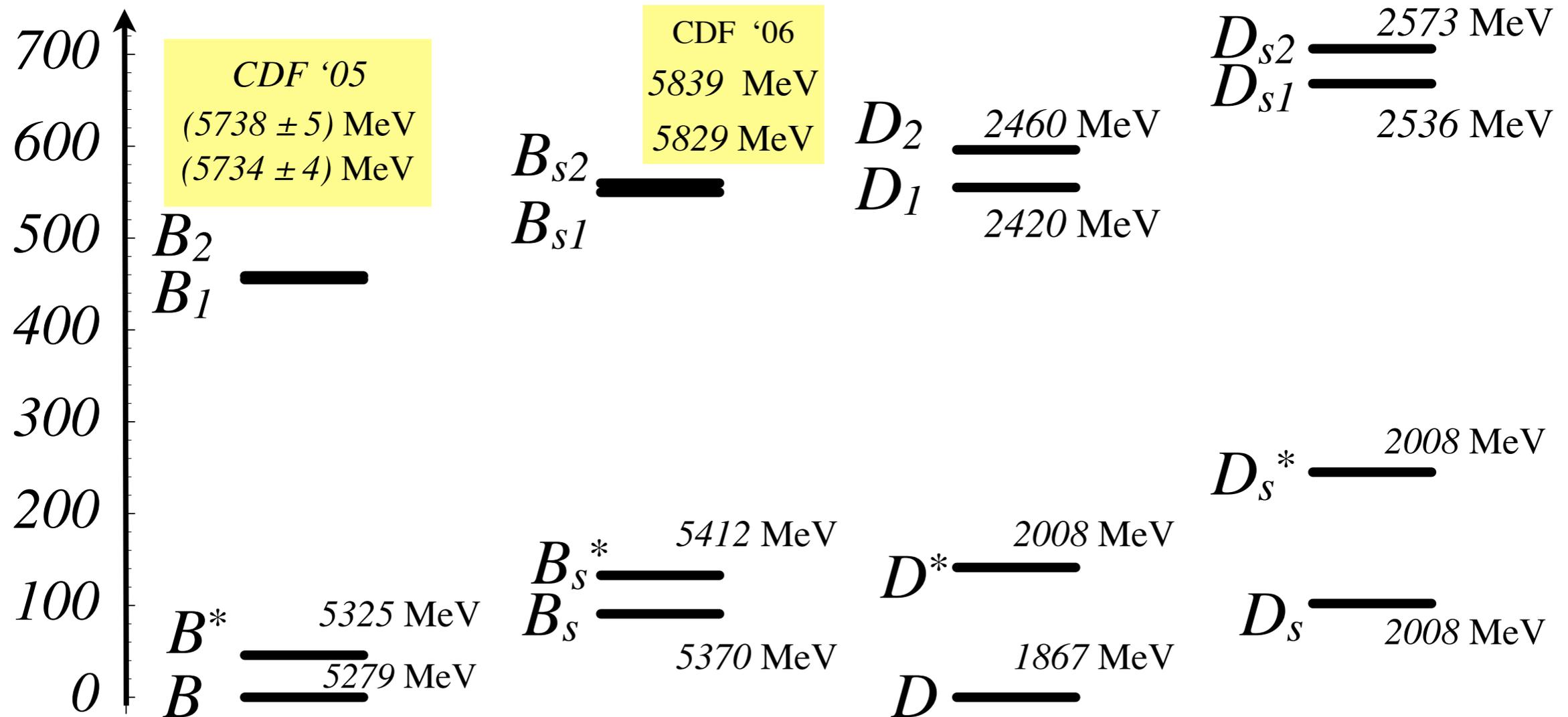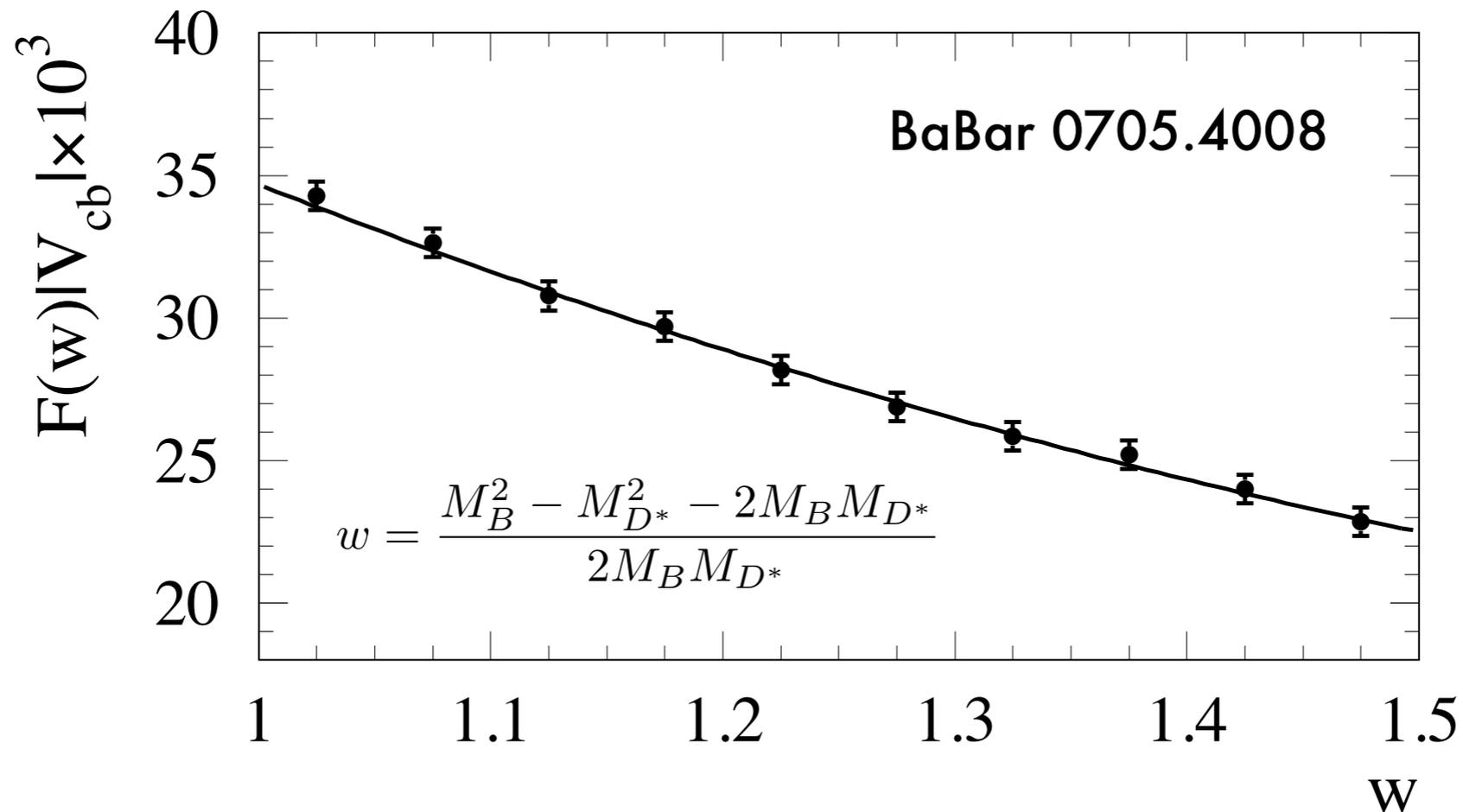

- To leading power, bottom and charm spectra are simply shifted by constant amount $m_b - m_c = 3.4$GeV.

  - $M_{B1} - M_B = (455 \pm 4)$ MeV, $M_{D1} - M_D = (555 \pm 1)$MeV

- "Spin doublets" almost degenerate:
  - e.g. $M_{B^*} - M_B = 46$ MeV

Extraction of V$_{cb}$ from B→D*lν
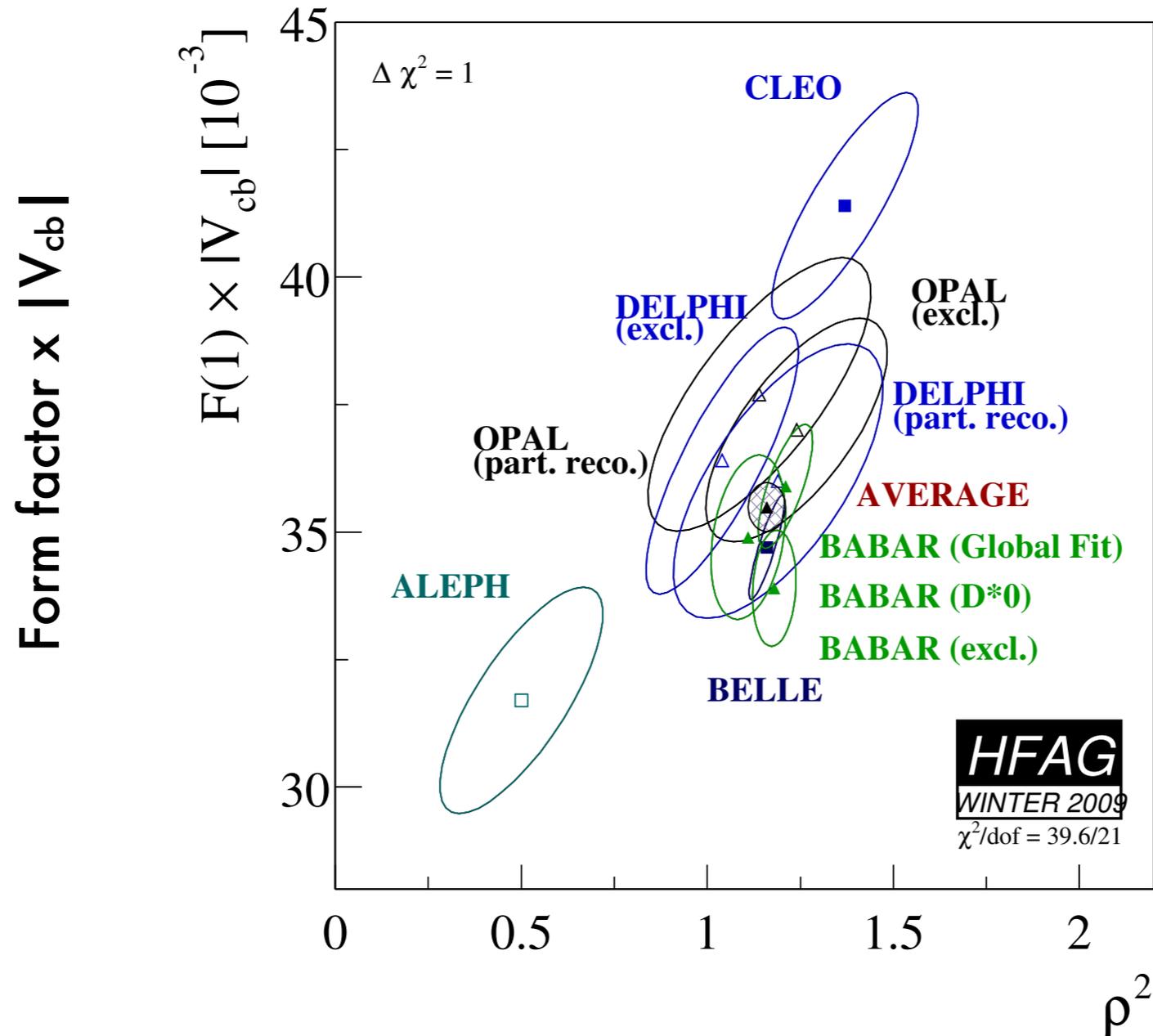
- Extrapolation to zero-recoil point
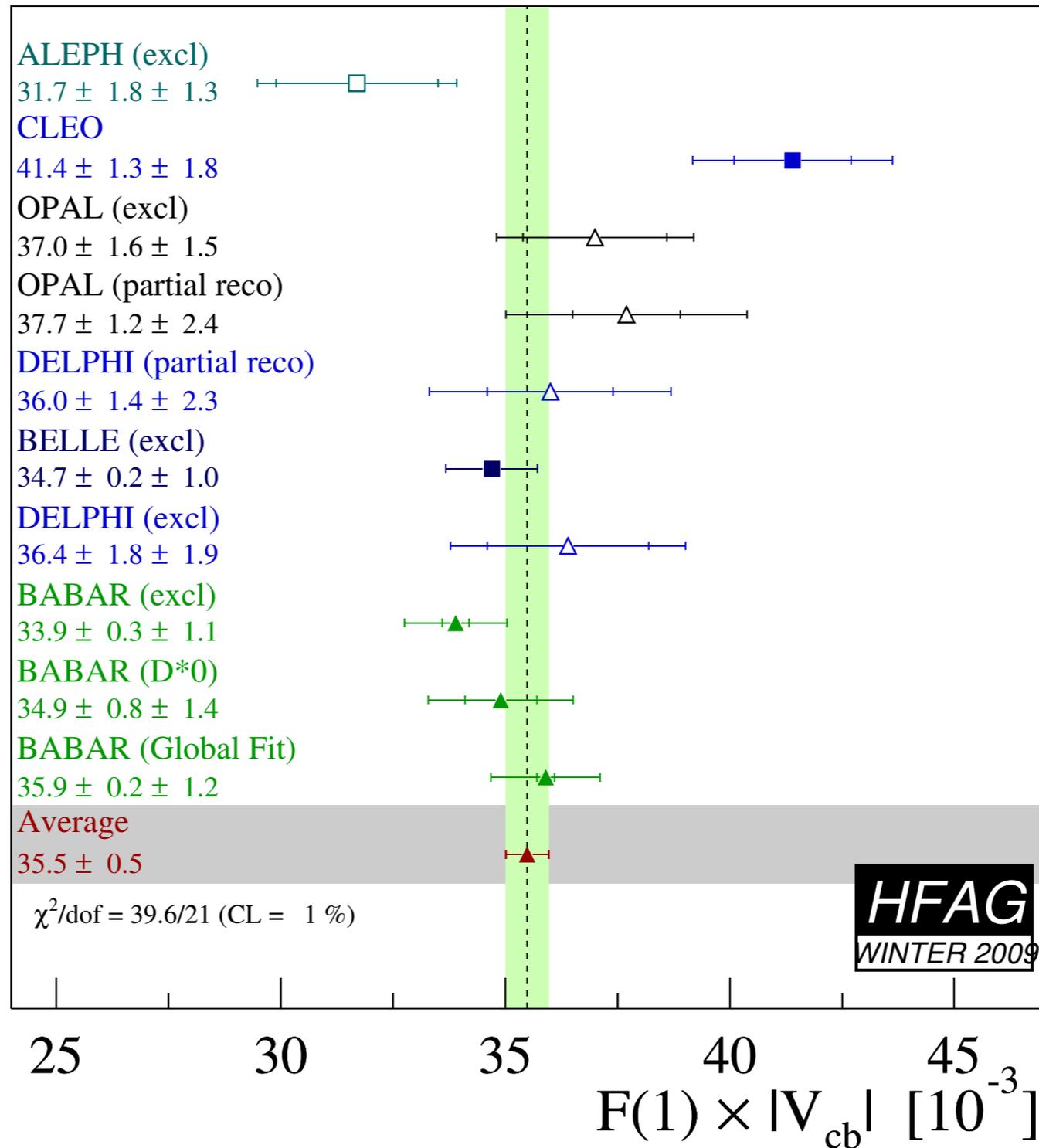

- Plot shows "form factor x |V$_{cb}$|", which is obtained by measuring dΓ/dw, dividing by phase-space factor and taking the square root.

Extraction of V$_{cb}$ from B→D*lν

Parameter ρ^2 corresponds to F'(w) at w=1.

Extraction of V_{cb} from B→D*lν

ALEPH (excl)
31.7 ± 1.8 ± 1.3

CLEO
41.4 ± 1.3 ± 1.8

OPAL (excl)
37.0 ± 1.6 ± 1.5

OPAL (partial reco)
37.7 ± 1.2 ± 2.4

DELPHI (partial reco)
36.0 ± 1.4 ± 2.3

BELLE (excl)
34.7 ± 0.2 ± 1.0

DELPHI (excl)
36.4 ± 1.8 ± 1.9

BABAR (excl)
33.9 ± 0.3 ± 1.1

BABAR (D*0)
34.9 ± 0.8 ± 1.4

BABAR (Global Fit)
35.9 ± 0.2 ± 1.2

Average
35.5 ± 0.5

χ^2/dof = 39.6/21 (CL = 1 %)

HFAG
WINTER 2009

$F(1) \times |V_{cb}|$ [10^{-3}]

Lattice result at zero recoil

$$\mathcal{F}(1) = 0.921(13)(20)$$

stat.   syst.

- Exp. value $|V_{cb}|\mathcal{F}(1) = (35.9 \pm 0.8) \times 10^{-3}$ and 0.7% e.m. correction then gives

$$|V_{cb}| = (38.7 \pm 0.9_{\mathrm{exp}} \pm 1.0_{\mathrm{theo}}) \times 10^{-3}.$$

- 2σ below value from inclusive decay $|V_{cb}| = (41.6 \pm 0.6) \times 10^{-3}$