Material zur

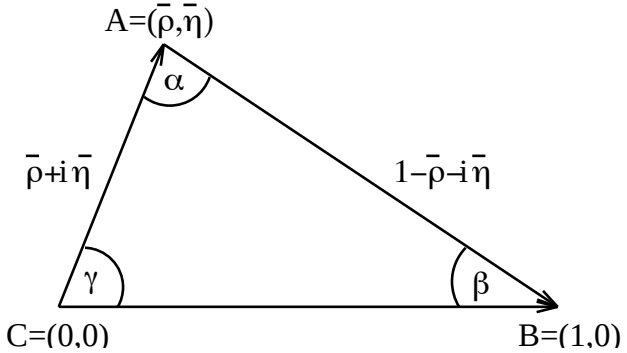
Vorlesung ”Flavorphysik”

Gudrun Hiller, Dortmund

Wolfenstein parameter $\lambda = \sin\Theta_C \simeq 0.22$, $A\lambda^2 \simeq 0.041$

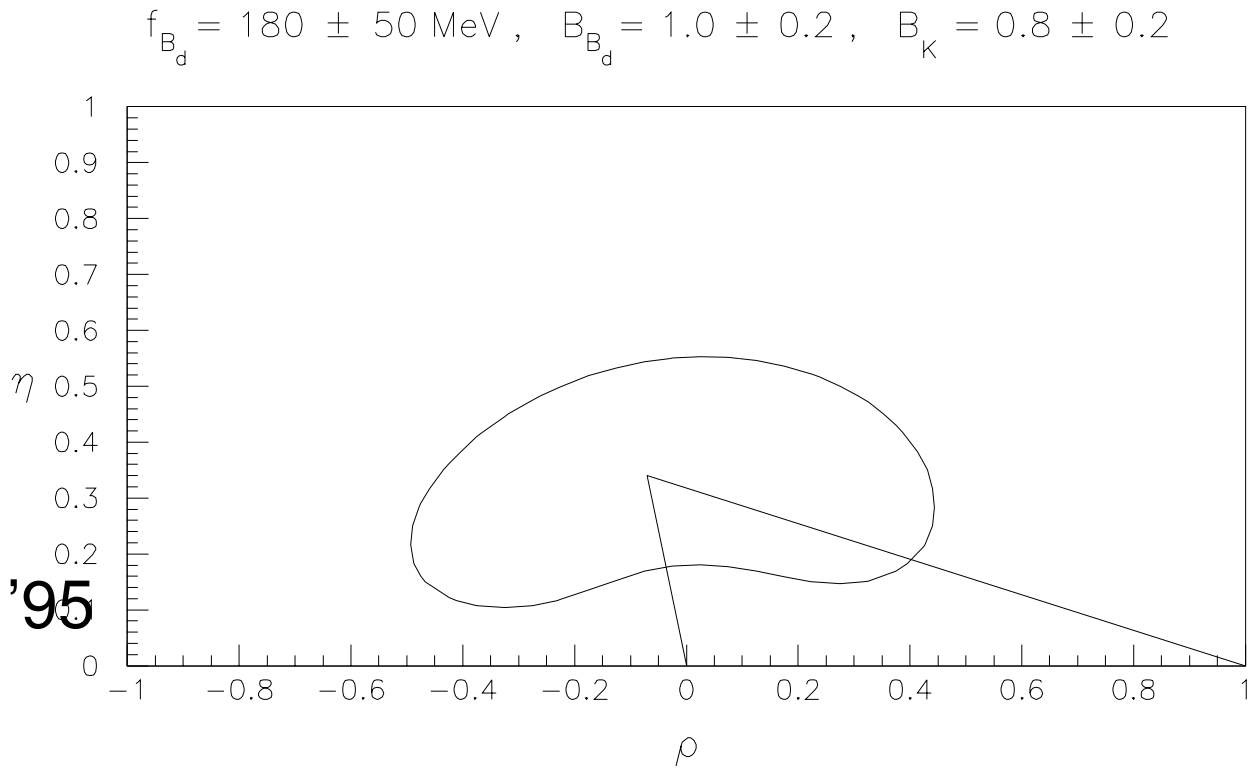
$$V = \begin{pmatrix} V_{ud} & V_{us} & V_{ub} \\ V_{cd} & V_{cs} & V_{cb} \\ V_{td} & V_{ts} & V_{tb} \end{pmatrix} = \begin{pmatrix} 1-\lambda^2/2 & +\lambda & A\lambda^3(\rho - i\eta) \\ -\lambda & 1-\lambda^2/2 & +A\lambda^2 \\ A\lambda^3(1-\rho-i\eta) & -A\lambda^2 & 1 \end{pmatrix} + \mathcal{O}(\lambda^4)$$

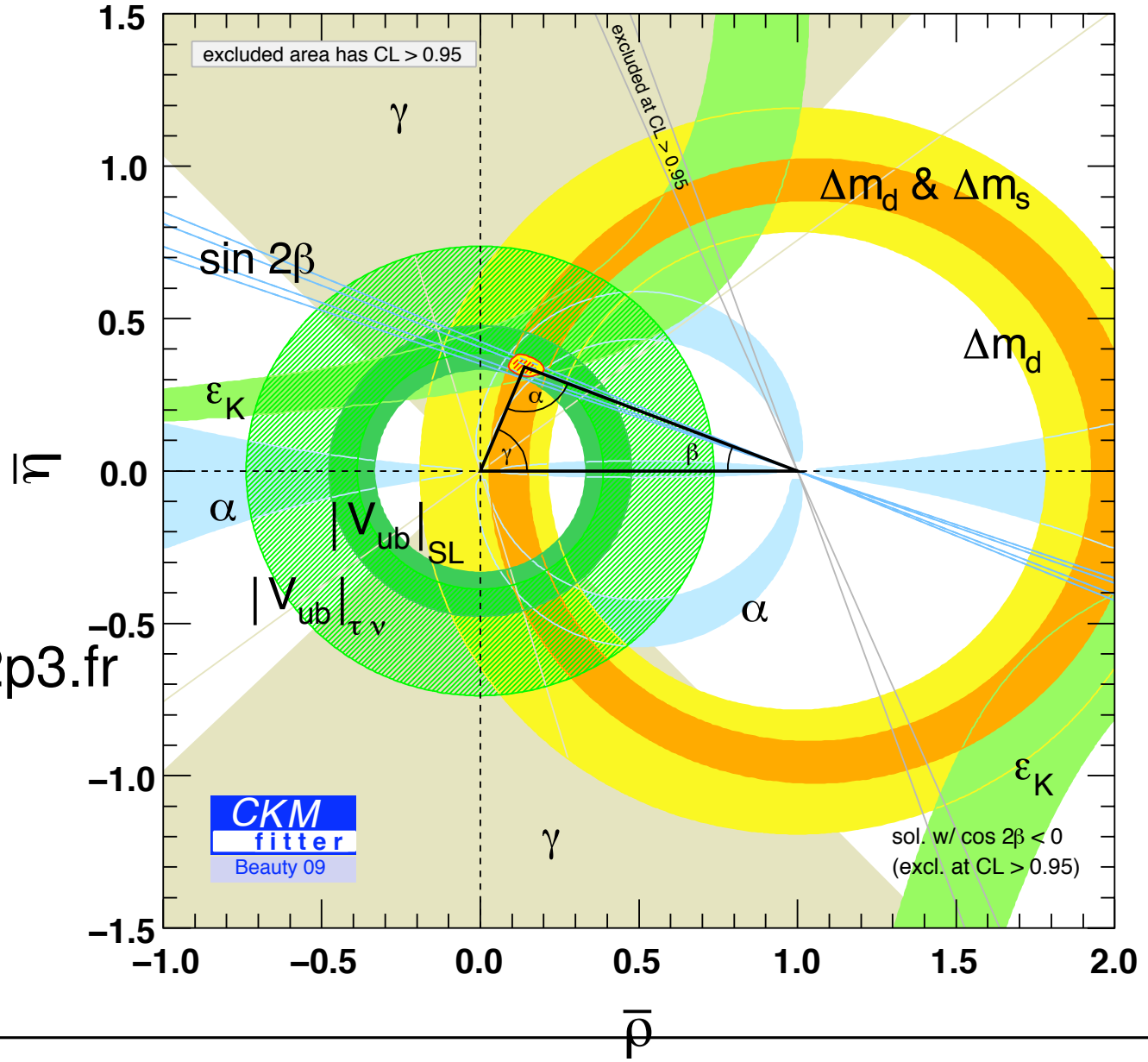
the unitarity triangle $V_{ub}V_{ud}^* + V_{cb}V_{cd}^* + V_{tb}V_{td}^* = 0$ $\quad \sum_j V_{ji}V_{jk}^* = \delta_{ik}$



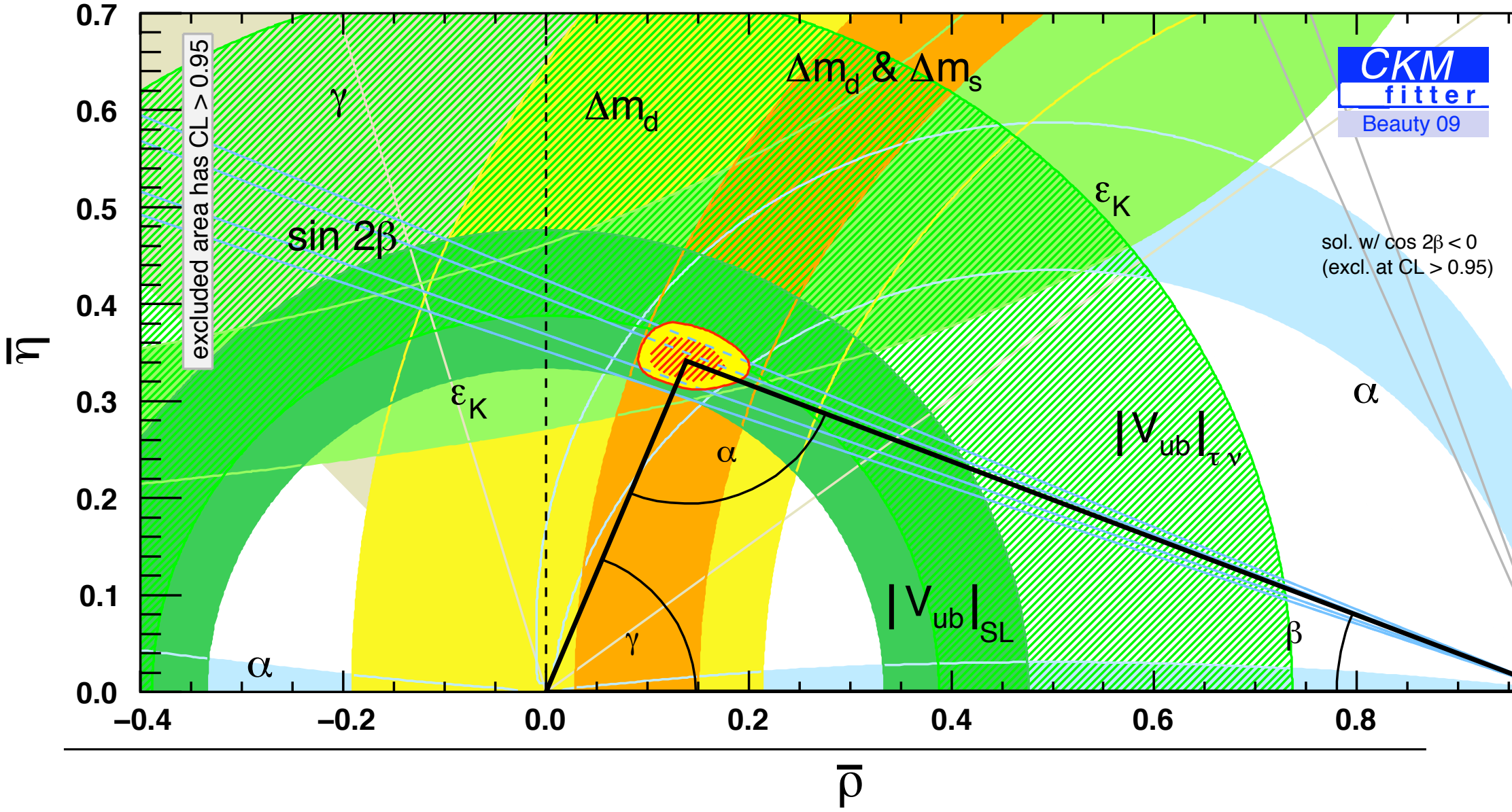
$\bar{\rho} = (1-\lambda^2/2)\rho$, $\bar{\eta} = (1-\lambda^2/2)\eta$ $\qquad$ data: $\alpha, \beta, \gamma = \mathcal{O}(1)$

ali,london ’95





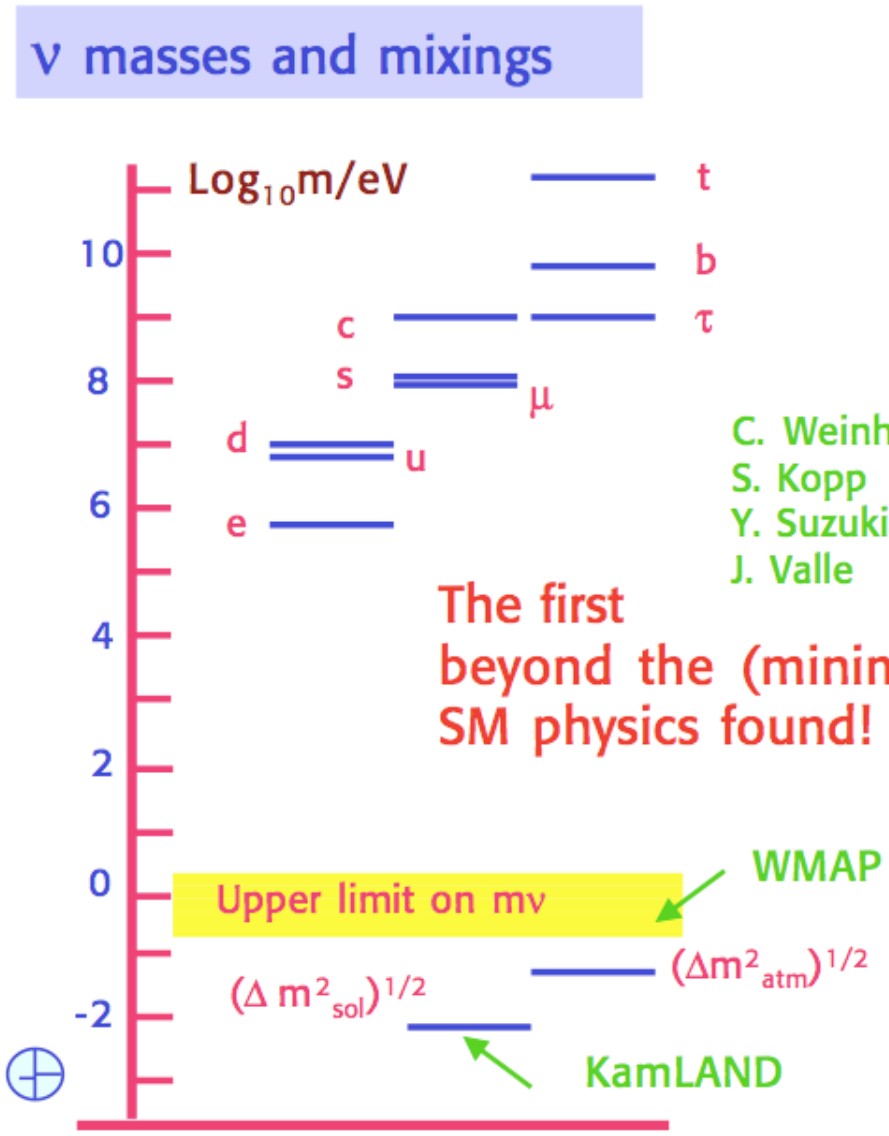
ckmfitter.in2p3.fr


CKM fitter
Beauty 09
excluded area has CL > 0.95
sol. w/ cos 2β < 0
(excl. at CL > 0.95)
γ
Δm_d
Δm_d & Δm_s
ε_K
sin 2β
ε_K
α
|V_ub|_τν
α
|V_ub|_SL
γ
α
β
η̄
ρ̄
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
–0.4
–0.2
0.0
0.2
0.4
0.6
0.8

Neutrinos vs geladenen Fermionen

Talk by G. Altarelli at Lepton Photon 2009

Neutrinos vs geladenen Fermionen



C. Weinheimer
S. Kopp
Y. Suzuki
J. Valle

The first beyond the (minimal) SM physics found!

Neutrino masses are really special!

$m_t/(\Delta m^2_{atm})^{1/2} \sim 10^{12}$

Massless ν's?

- no ν_R
- L conserved

Small ν masses?

- ν_R very heavy
- L not conserved

Neutrino masses point to M_{GUT}, well fit into the SUSY picture and in GUT's