DESY Zeuthen, 28.2.03

Welcome to the Mini-Workshop

ELECTROWEAK PRECISION DATA AND THE HIGGS MASS

DESY Zeuthen, February 28 – March 1, 2003

organized by

DESY Zeuthen
DESY Hamburg

and

MPI Munich

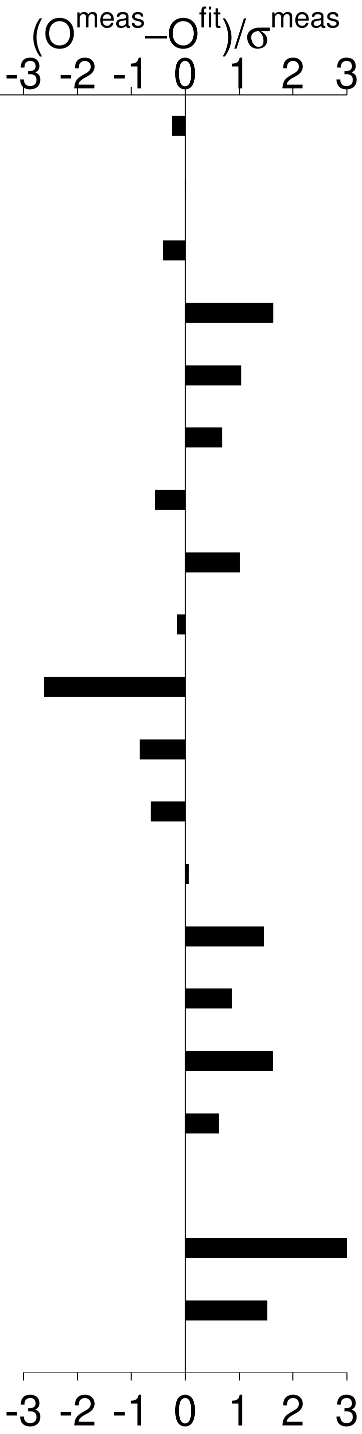
The Organizing Committee
Stefan Dittmaier (MPI)
Wolfgang Hollik (MPI)
Fred Jegerlehner (DESY)
Klaus Mönig (DESY)
Peter Zerwas (DESY)

Standard Model precision tests — where we are

LEPEWWG '02

Summer 2002

	Measurement	Pull
$\Delta\alpha^{(5)}_{had}(m_Z)$	0.02761 ± 0.00036	-0.24
m_Z [GeV]	91.1875 ± 0.0021	0.00
Γ_Z [GeV]	2.4952 ± 0.0023	-0.41
σ^0_{had} [nb]	41.540 ± 0.037	1.63
R_l	20.767 ± 0.025	1.04
$A^{0,l}_{fb}$	0.01714 ± 0.00095	0.68
$A_l(P_\tau)$	0.1465 ± 0.0032	-0.55
R_b	0.21644 ± 0.00065	1.01
R_c	0.1718 ± 0.0031	-0.15
$A^{0,b}_{fb}$	0.0995 ± 0.0017	-2.62
$A^{0,c}_{fb}$	0.0713 ± 0.0036	-0.84
A_b	0.922 ± 0.020	-0.64
A_c	0.670 ± 0.026	0.06
A_l(SLD)	0.1513 ± 0.0021	1.46
$\sin^2\theta^{lept}_{eff}(Q_{fb})$	0.2324 ± 0.0012	0.87
m_W [GeV]	80.449 ± 0.034	1.62
Γ_W [GeV]	2.136 ± 0.069	0.62
m_t [GeV]	174.3 ± 5.1	0.00
$\sin^2\theta_W(\nu N)$	0.2277 ± 0.0016	3.00
$Q_W(Cs)$	-72.18 ± 0.46	1.52



Sensitivity to the Higgs-boson mass M_{H}

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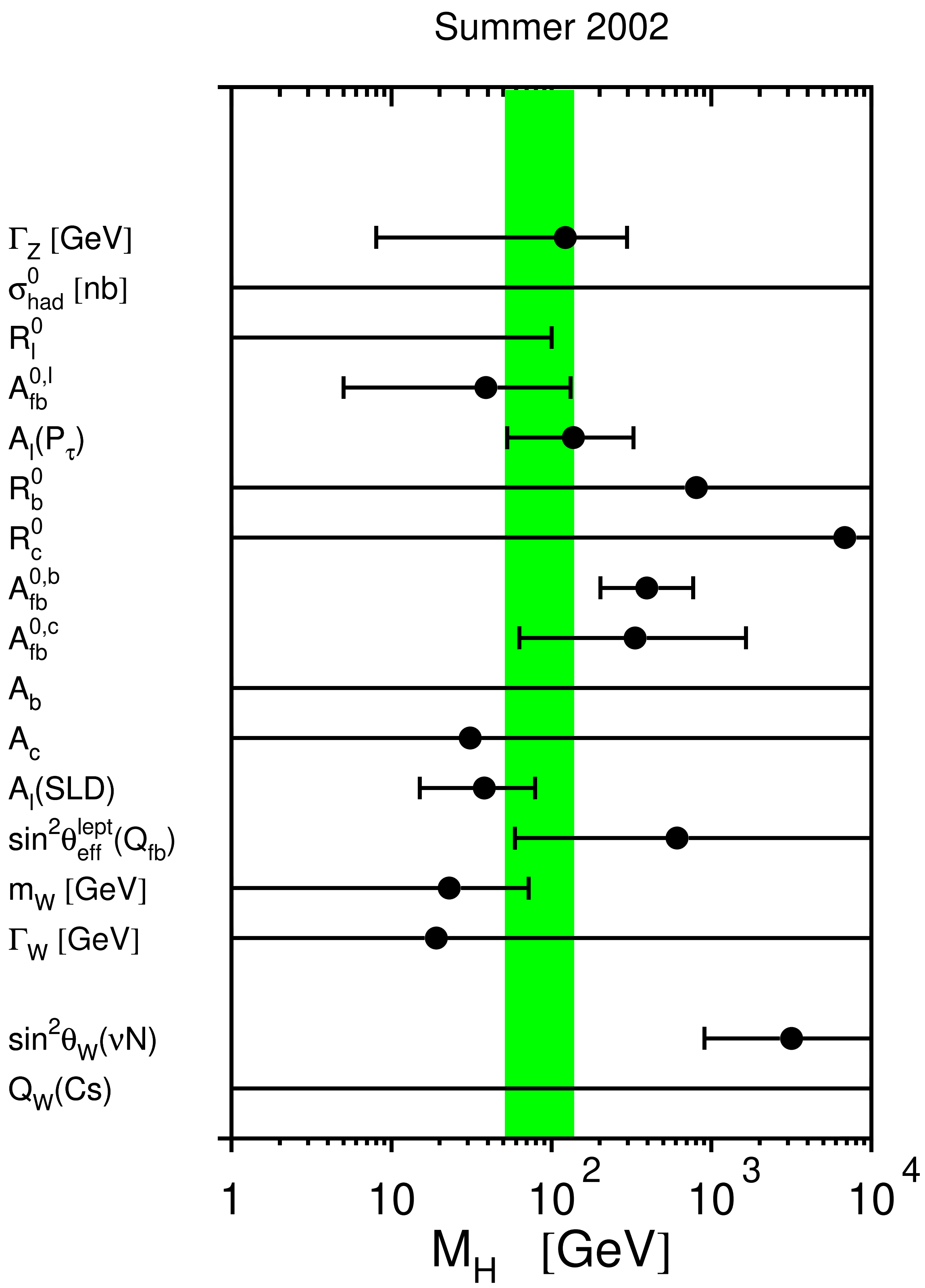

Overall fit of the Higgs-boson mass $M_{\rm H}$

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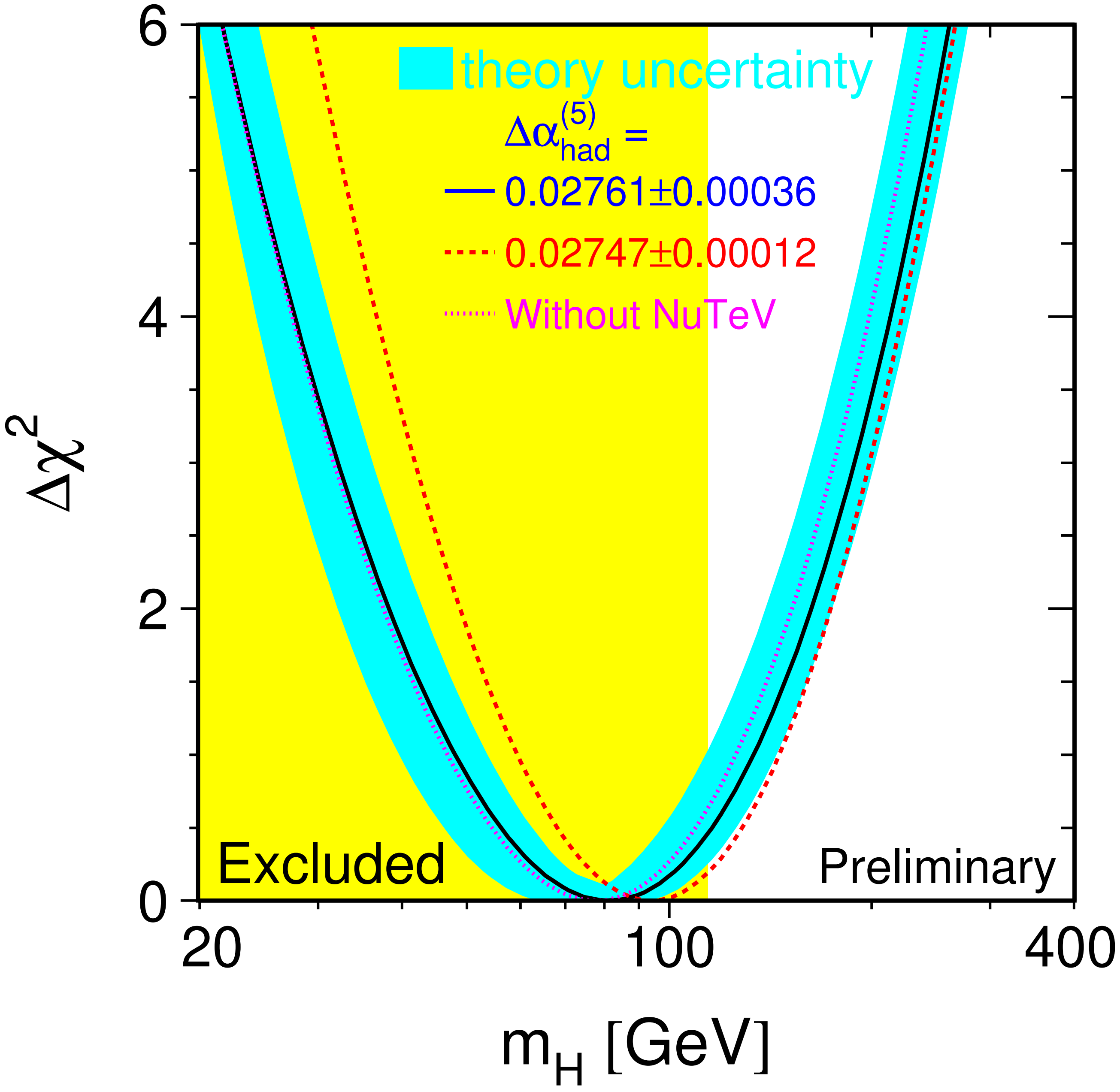

$M_{\rm H} = 81^{+52}_{-33}\,{\rm GeV}$, $\chi^2_{\rm min} = 29.7/15 \quad (P = 1.3\%)$

$M_{\rm H} < 193\,{\rm GeV} \quad (95\%{\rm C.L.})$

How conclusive is this result ?

$\hookrightarrow$ Main issue of this workshop !

Present situation:
Assessments of the SM fit ranges from
"good overall agreement" to "lose–lose for the Standard Model"

The idea behind the workshop is to discuss

- the theoretical uncertainties in predictions for observables
- the systematical errors in experimental analyses
- the conclusiveness of the M_H fit
- the possibility whether the MSSM provides a solution

Special topics:

- global M_H fit – interplay between various parameters
- use of and predictions for pseudo observables
- M_W determination at LEP, Tevatron and NuTev
- asymmetries measurements at the Z resonance: A_{FB}(b), A_{LR}(SLD), etc.
- other issues, such as $\alpha(M_\mathrm{Z})$, luminosity measurement, etc.
- fit of the MSSM parameters to ew. precision data

Finally, the workshop will be summarized in a
joined report in the DESY-03 series.

Mini-Workshop *ELECTROWEAK PRECISION DATA AND THE HIGGS MASS*
DESY Zeuthen, February 28 – March 1, 2003

Agenda

		Friday, February 28, seminar room 2		
8.45	–	8.50	Gensch, U.	Welcome and opening
8.50	–	9.00	Dittmaier, S.	Introduction
9.00	–	9.30	Grünewald, M.	Ew. precision data – global M_{H} fit
9.30	–	10.00	Chanowitz, M.	Higgs mass probabilities
10.00	–	10.30		Coffee break
10.30	–	11.00	Wells, P.	A_{FB}(b) – exp. aspects
11.00	–	11.30	Swartz, M.	A_{LR}(SLD) – exp. aspects
11.30	–	12.00	Hawkings, R.	M_{W}(LEP) – exp. aspects
12.00	–	12.30	Baur, U.	M_{W} at hadron colliders
12.30	–	14.00		Lunch
14.00	–	14.30	McFarland, K.S.	$\sin^2\theta_W$(NuTev) – exp. aspects
14.30	–	15.00	Moch, S.	QCD uncertainties at NuTev
15.00	–	15.30	Jadach, S.	Bhabha scattering / luminosity
15.30	–	16.00		Coffee break
16.00	–	16.30	Jegerlehner, F.	$\alpha(M_{\mathrm{Z}})$
16.30	–	17.00	Hollik, W.	Z observables $(+\Delta r)$ – ew. aspects
17.00	–	17.30	van Neerven, W.	Z observables – QCD aspects
17.30	–	18.00		Discussion

Agenda (continued)

Saturday, March 1, seminar room 2				
9.00	–	9.30	Passarino, G.	Pseudo versus realistic observables – blue-band width
9.30	–	10.00	Weiglein, G.	Fit of MSSM to ew. precision data
10.00	–	10.45		Discussion
10.45	–	11.15		Coffee break
11.15	–	12.00	Mönig, K.	Workshop summary