

Staging Scenarios at LCWS14

- Designed to explore impact of different sequences of upgrades on evolution of Higgs precision

a. 250 inv.fb @ 250, 500 inv.fb @ 500

b. 250 inv.fb @ 250, 500 inv.fb @ 550

c. 250 inv.fb @ 250, 1000 inv.fb @ 500

(for comparison with scenario b)

d. 100 inv.fb @ 250, 200 inv.fb @ 350, 500 inv.fb @ 500

e. 100 inv.fb @ 250, 200 inv.fb @ 350, 500 inv.fb @ 550

f. 25 inv.fb @ 250, 350 inv.fb @ 350, 500 inv.fb @ 500

g. 500 inv.fb @ 250, 500 inv.fb @ 500

a.* 350 inv.fb @ 350, 500 inv.fb @ 500

h. 50 inv.fb @ 250, 200 inv.fb @ 350, 500 inv.fb @ 500,
1 inv.ab @ 250

i. 50 inv.fb @ 250, 200 inv.fb @ 350, 500 inv.fb @ 550,
1 inv.ab @ 250

Scenarios Discussion at LCWSI4

- Extend program to ~20 years
- Consider full high energy physics program
 - eg. top physics - esp. ~350 GeV
 - WW threshold, etc. will be also needed
- What is initial period of running at 250 GeV?

Staging Scenarios at LCWS I4

- Designed to explore impact of different sequences of upgrades on evolution of Higgs precision

- | | | |
|-----------|-------------------------------------|---------------------------------------|
| a. | 250 inv.fb @ 250, | 500 inv.fb @ 500 (add 350 GeV) |
| b. | 250 inv.fb @ 250, | 500 inv.fb @ 550 |
| c. | 250 inv.fb @ 250, | 1000 inv.fb @ 500 |
| | (for comparison with scenario b) | |
| d. | 100 inv.fb @ 250, 200 inv.fb @ 350, | 500 inv.fb @ 500 |
| e. | 100 inv.fb @ 250, 200 inv.fb @ 350, | 500 inv.fb @ 550 |
| f. | 25 inv.fb @ 250, 350 inv.fb @ 350, | 500 inv.fb @ 500 |
| g. | 500 inv.fb @ 250, | 500 inv.fb @ 500 (add 350 GeV) |
| a.* | 350 inv.fb @ 350, | 500 inv.fb @ 500 |
| h. | 50 inv.fb @ 250, | 200 inv.fb @ 350, |
| | 1 inv.ab @ 250 | 500 inv.fb @ 500, |
| i. | 50 inv.fb @ 250, | 200 inv.fb @ 350, |
| | 1 inv.ab @ 250 | 500 inv.fb @ 550, |

The Reduced Set of Scenarios

discussed by Joint WVG following LCWSI4

- a.
250 fb⁻¹ @ 250 GeV
500 fb⁻¹ @ 500 GeV
200 fb⁻¹ @ 350 GeV
750 fb⁻¹ @ 250 GeV
- g.
500 fb⁻¹ @ 250 GeV
500 fb⁻¹ @ 500 GeV
200 fb⁻¹ @ 350 GeV
500 fb⁻¹ @ 250 GeV
- h.
50 fb⁻¹ @ 250 GeV
200 fb⁻¹ @ 350 GeV
500 fb⁻¹ @ 500 GeV
1 ab⁻¹ @ 250 GeV

TOTALS

1 ab⁻¹ at 250 GeV
200 fb⁻¹ at 350 GeV
500 fb⁻¹ at 500 GeV

The Reduced Set of Scenarios

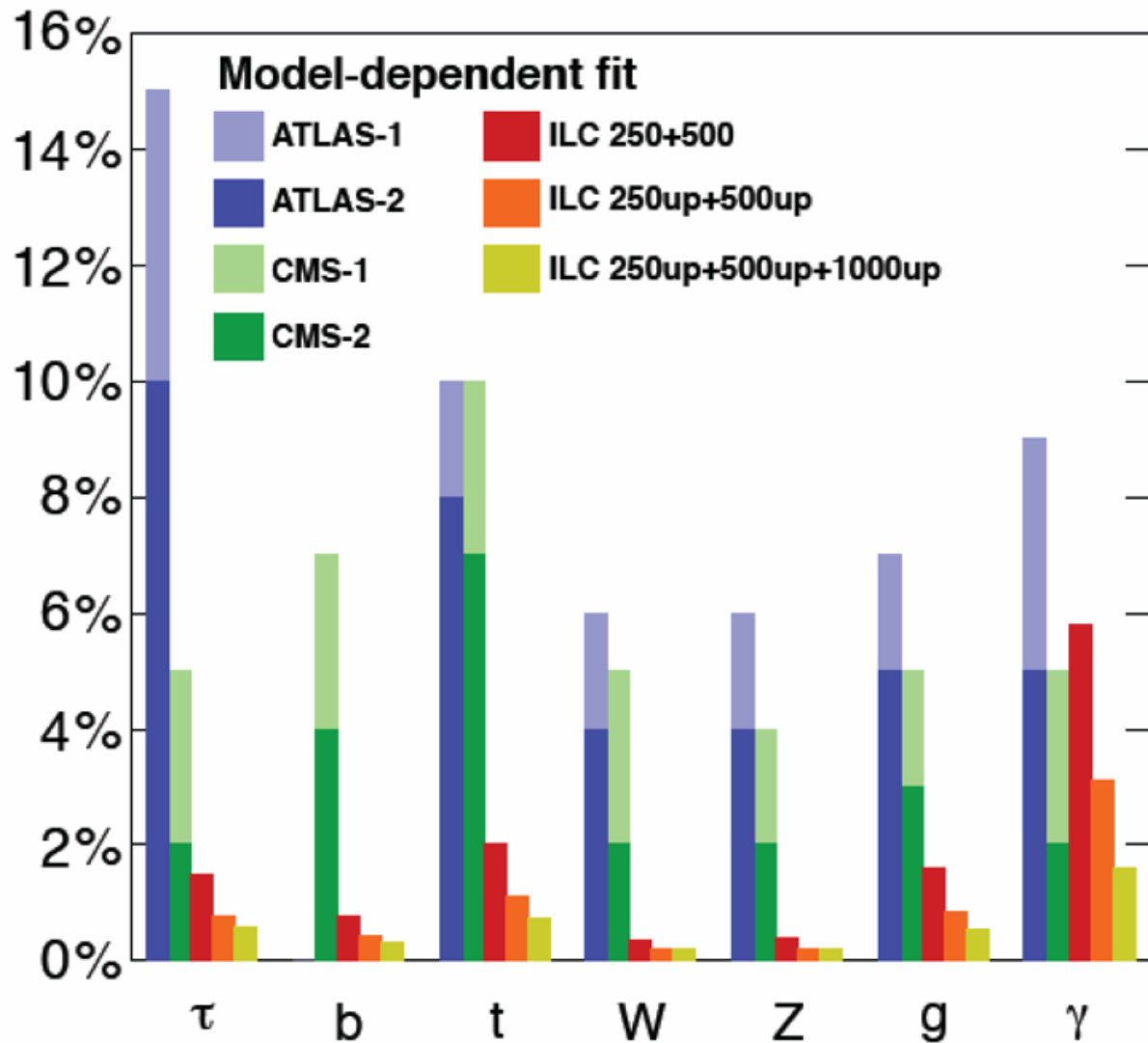
discussed by Joint WVG following LCWSI4

- a.
 - 250 fb⁻¹ @ 250 GeV ~ 3.3 Snowmass Yrs
 - 500 fb⁻¹ @ 500 GeV ~2.8 Snowmass Yrs
 - 200 fb⁻¹ @ 350 GeV 2.0 Snowmass Yrs
 - 750 fb⁻¹ @ 250 GeV ~2.5 Snowmass Yrs
- g. total =10.6
 - 500 fb⁻¹ @ 250 GeV ~6.6 Snowmass Yrs
 - 500 fb⁻¹ @ 500 GeV ~2.8 Snowmass Yrs
 - 200 fb⁻¹ @ 350 GeV 2.0 Snowmass Yrs
 - 500 fb⁻¹ @ 250 GeV ~1.7 Snowmass Yrs
- h. total =13.1
 - 50 fb⁻¹ @ 250 GeV 0.7 Snowmass Yrs
 - 200 fb⁻¹ @ 350 GeV 2.0 Snowmass Yrs
 - 500 fb⁻¹ @ 500 GeV ~2.8 Snowmass Yrs
 - 1 ab⁻¹ @ 250 GeV ~3.4 Snowmass Yrs

TOTALS

1 ab⁻¹ at 250 GeV
200 fb⁻¹ at 350 GeV
500 fb⁻¹ at 500 GeV

Sachio's MEXT numbers



ATLAS/CMS:
Lumi 3000 fb⁻¹, sqrt(s) = 14 TeV

ILC 250:
Lumi 417 fb⁻¹, sqrt(s) = 250 GeV

ILC 500:
Lumi 833 fb⁻¹, sqrt(s) = 500 GeV

ILC 250up:
Lumi 1920 fb⁻¹, sqrt(s) = 250 GeV

ILC 500up:
Lumi 2670 fb⁻¹, sqrt(s) = 500 GeV

ILC 1000up:
Lumi 4170 fb⁻¹, sqrt(s) = 1 TeV

Sachio's MEXT numbers

ILC 250:
Lumi 417 fb⁻¹, sqrt(s) = 250 GeV

ILC 500:
Lumi 833 fb⁻¹, sqrt(s) = 500 GeV

ILC 250up:
Lumi 1920 fb⁻¹, sqrt(s) = 250 GeV

ILC 500up:
Lumi 2670 fb⁻¹, sqrt(s) = 500 GeV

TDR - 3 snowmass yr
225 fb⁻¹ scaled to 5 yr
375 fb⁻¹

TDR - 3 snowmass yr
540 fb⁻¹ scaled to 5 yr
900 fb⁻¹

250 up - 3 Snowmass yr
900 fb⁻¹ scaled to 5 yr
1500 fb⁻¹ (+375 = 1875 fb⁻¹)

500 up - 3 Snowmass yr
1080 fb⁻¹ scaled to 5 yr
1800 fb⁻¹ (+900 = 2700 fb⁻¹)

No 350 GeV running!

TDR Luminosities
250 GeV - 0.75×10^{34}
350 GeV - 1.0×10^{34}
500 GeV - 1.8×10^{34}

Jenny's numbers

	Stage	250	500			500 LumiUP		1000
Scenario	\sqrt{s} [GeV]	250	350	500	250	500	250	1000
A1 (a)	int.lumi [fb^{-1}]	250	200	1000	750	4000	1000	5000
	time [years]	2	1	4	3	8	2	10
B1 (g)	int.lumi [fb^{-1}]	500	200	1000	500	4000	1000	5000
	time [years]	4	1	4	2	8	2	10
C1 (h)	int.lumi [fb^{-1}]	50	200	1000	950	4000	1000	5000
	time [years]	0.4	1	4	3.8	8	2	10
D1	int.lumi [fb^{-1}]	1250	200	1000	-	4000	750	5000
	time [years]	10	1	4	-	8	1.5	10

	Stage	250	500			500 LumiUP		1000
Scenario	\sqrt{s} [GeV]	250	350	500	250	500	250	1000
A2 (a)	int.lumi [fb^{-1}]	250	200	1000	750	4000	1000	5000
	time [years]	2	1	4	3	8	2	10
B2 (g)	int.lumi [fb^{-1}]	500	200	1000	250	4000	1000	5000
	time [years]	4	1	4	1	8	2	10
C2 (h)	int.lumi [fb^{-1}]	50	200	1000	1150	4000	1000	5000
	time [years]	0.4	1	4	4.6	8	2	10
D2	int.lumi [fb^{-1}]	1250	200	1000	-	2500	-	5000
	time [years]	10	1	4	-	5	-	10

New charge - July 6

Dear LCCPDeb,

At the LCB meeting today, it was agreed that we need a consistent set of luminosity numbers at different energies and running scenarios that are 'official numbers'. For that, the process is

1. The ILC parameter working group comes up with a few scenarios. The deadline is early August.
2. Those scenarios will be discussed by LCC, and one is picked. There may be some iterations with the ILC parameters WG.
3. The scenario is sent to the LCB and approved. There may be some iterations with the LCC.

The whole process should end by the Belgrade LCWS (which is before the ICFA seminar) by the latest.

Best

- Hitoshi

Our new charge from LCB meeting

- Quickly produced a set of end-point parameters:
 - integrated luminosity at each energy
- What does quickly mean?
 - July 6 message asked for numbers by mid-August
 - but there is a presentation to MEXT Physics Group on July 29, so needed even sooner - say 10 days