

# **Report from Physics Coordinator**

Keisuke Fujii  
Jan. 11, 2016

# ***The staging option resurfaced again!***

ILC Parameters Joint WG met on Jan. 4

- Our goal is to consider the physics potential for an ILC that starts operations at low energy, either 250 GeV, or 350 GeV.
- We need to make the 1st stage as attractive as possible.  
→ as high Luminosity as possible for the 1st stage.
- We could consider a different choice for the machine parameters.
- Official request sent to Shin Michizono for some machine manpower to investigate the possibility.
- Lyn has asked us to provide a first update on the physics impact of the staging possibilities by mid February.

# The Current Official Operation Scenario: H20

J. Brau : ICHEP2016

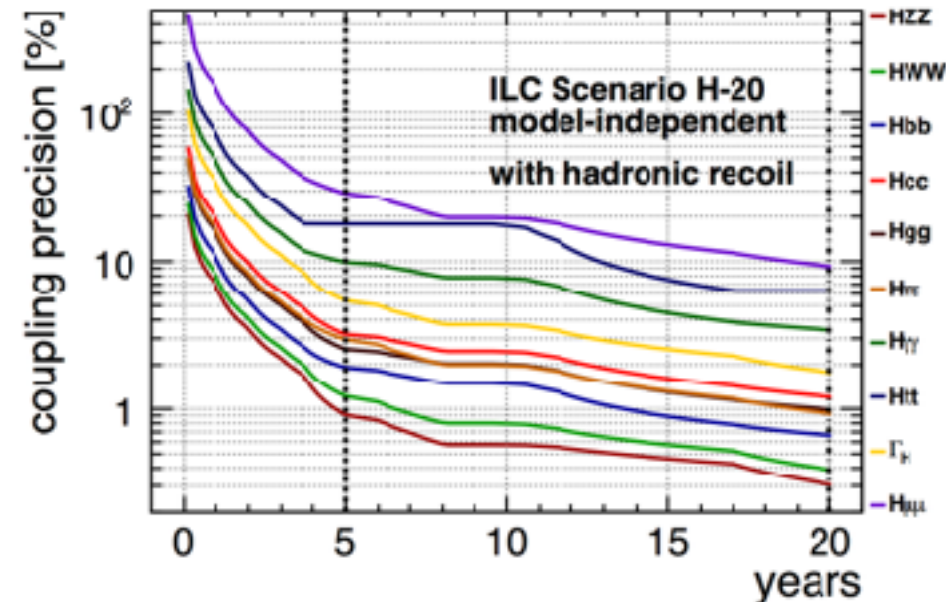
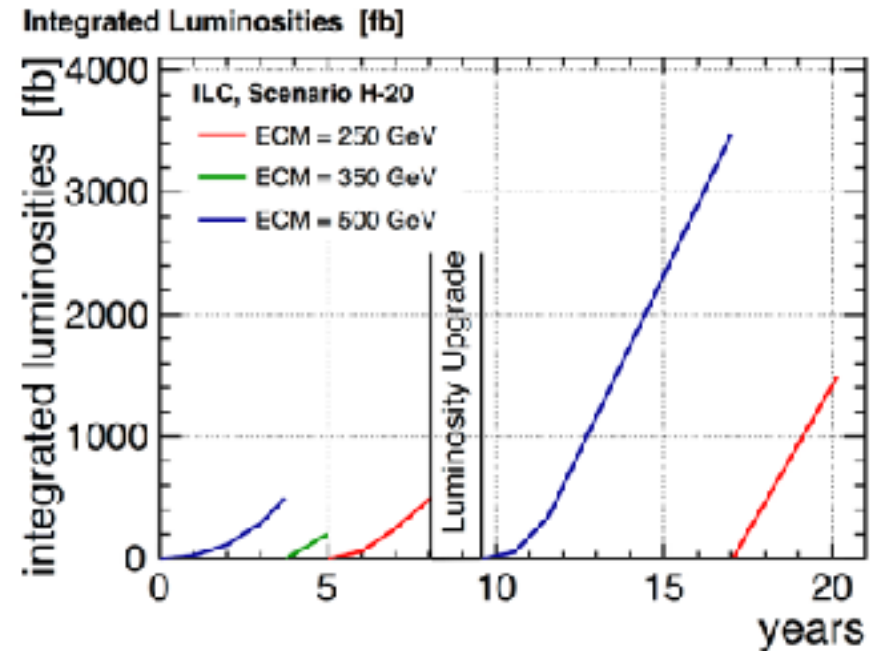
| <i>ILC Physics Goals</i>                            | <i>500 GeV</i> | <i>350 GeV</i> | <i>250 GeV</i> |
|---|----------------|----------------|----------------|
| • precision Higgs couplings                         | ✓              | ✓              | ✓              |
| • gHWW and overall normalization of Higgs couplings | ✓              | ✓              |                |
| • search for invisible and exotic Higgs decay modes | ✓              | ✓              | ✓              |
| • Higgs couplings to top                            | ✓              |                |                |
| • Higgs self-coupling                               | ✓              |                |                |
| • search for extended Higgs states                  | ✓              |                |                |
| • precision electroweak couplings of the top quark  | ✓              |                |                |
| • precision W couplings                             | ✓              | ✓              |                |
| • precision search for Z'                           | ✓              |                |                |
| • search for supersymmetry                          | ✓              |                |                |
| • search for Dark Matter                            | ✓              |                |                |
| • top quark mass from threshold scan                |                | ✓              |                |
| • precision Higgs mass                              |                |                | ✓              |

Figure 1: ILC Physics Goals.

$$\Delta m_h = 20 \text{ MeV}$$

→ 0.2% coupling uncertainty  
for hWW and hZZ

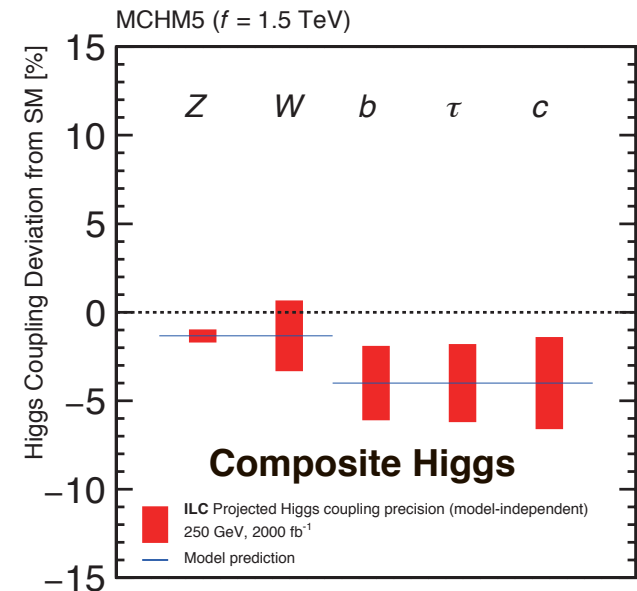
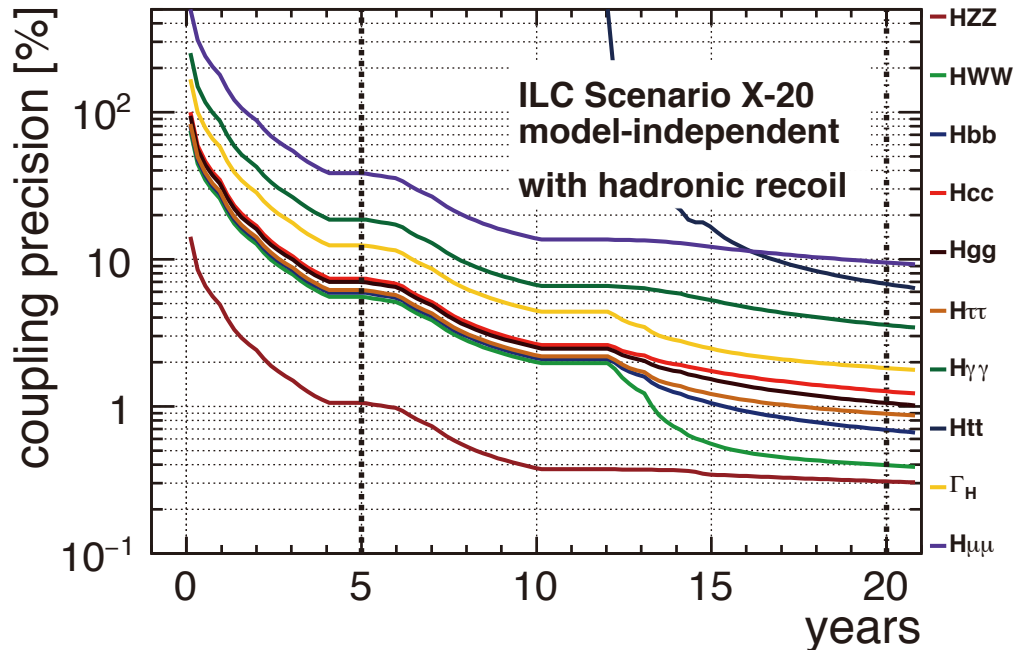
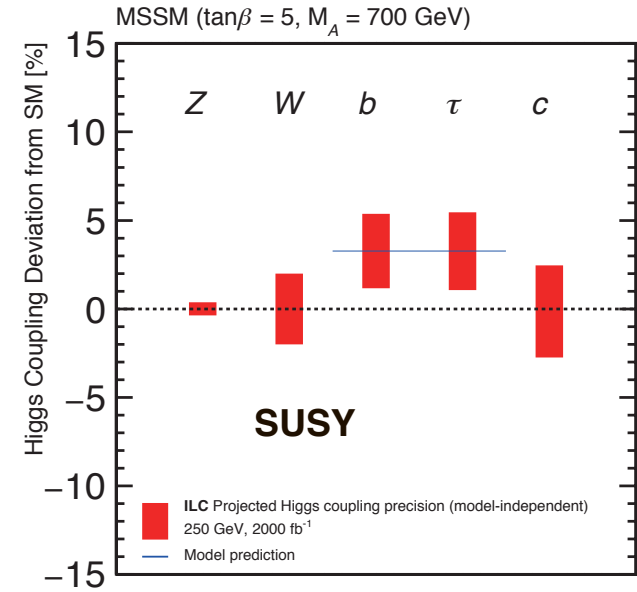
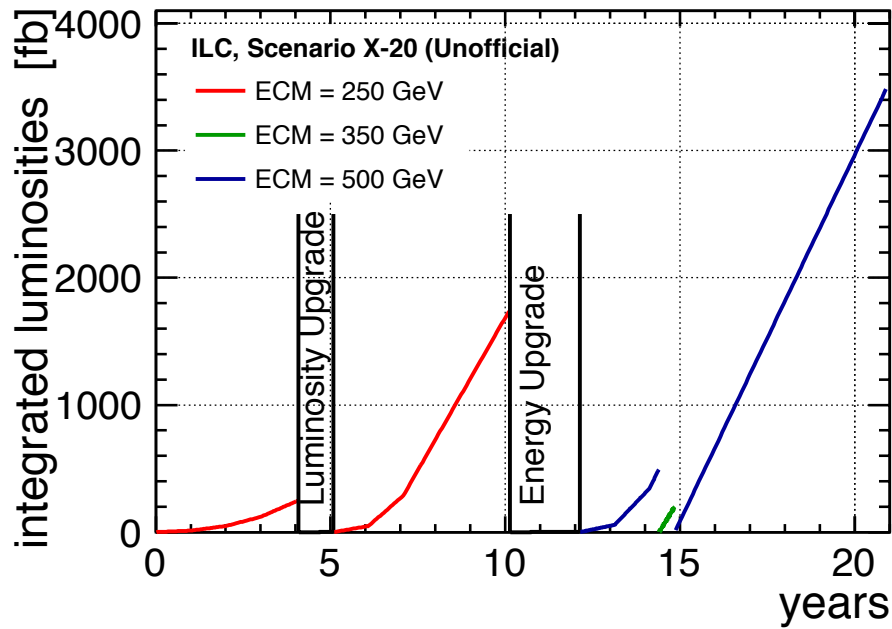
*high luminosity 250GeV run will be needed anyway.*



# The Unofficial Operation Scenario: X20?

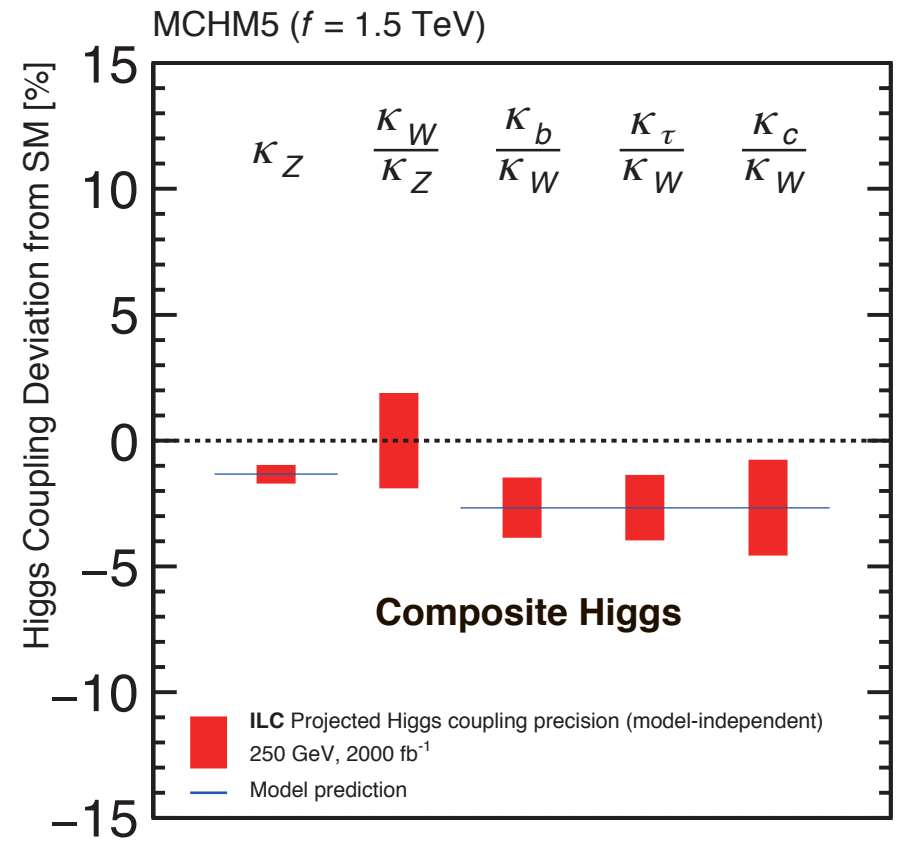
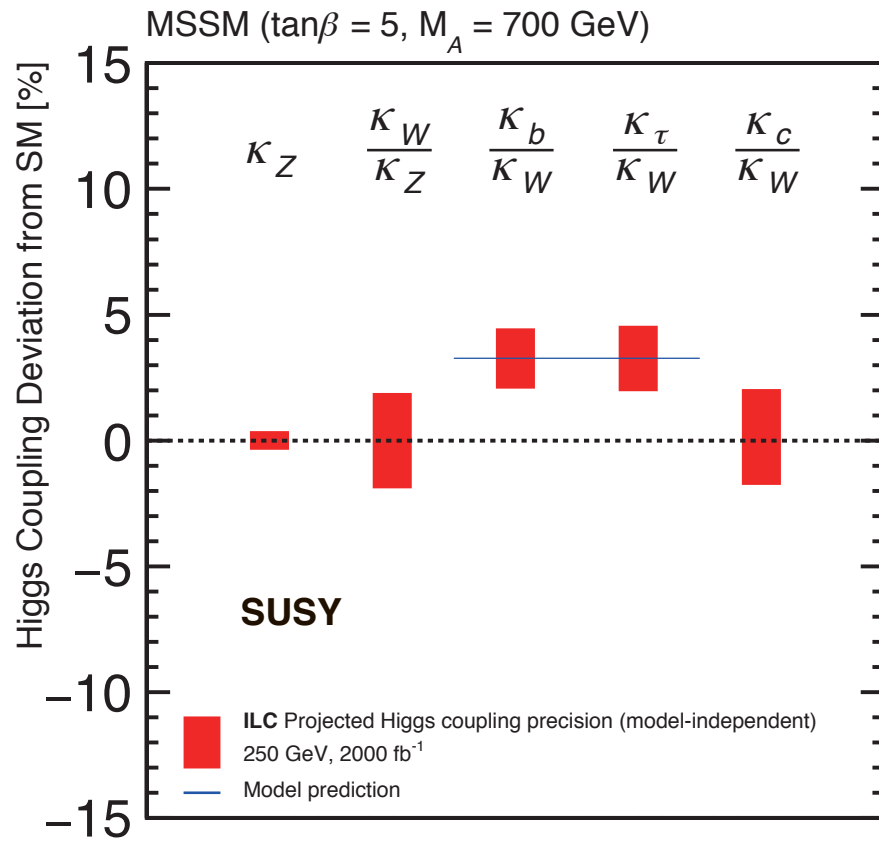
J.Tian: private communication

Integrated Luminosities [fb]



# The Unofficial Operation Scenario: X20?

J.Tian: private communication



# Support Document that follows up the ICFA letter

First authors' meeting held on Sep. 9

Discussed the structure and basic ideas about contents together with how to share the writing.

2nd authors' meeting held on Oct. 13

Reviewed the status of the draft and discussed the request from JHEPC and possible readjustment of the contents of the document.

3rd authors' meeting held on Nov. 1

Reviewed the status of the draft (significant progress, but there are still missing parts, expected to be filled in shortly) and discussed the timeline until LCWS 2016.

4th authors' meeting held on Nov. 16

Reviewed the status of the draft (significant progress, most part filled). All the part to be filled and frozen by next Monday for final editing by Jenny and KF until Nov. 28.

5th authors' meeting held on Dec. 13

Reviewed the status of the draft. Loose ends identified. The current draft is 47 pages long but we decided not to shorten it but to provide an executive summary consisting of 10 or so bullet points. Disclaimer concerning staging options will be added in the introduction. Michael will expand and generalize the DM treatment.

***As of Jan. 11, 2017, the draft now has an executive summary, more consistent references, but we have still some gaps to fill.***

***A draft has been sent to LCC physics WG and LCC physics&detector EB. No comments so far but, we will try to finish this up by the of January 2017.***

# ***Physics focus schedule***

**Jan 11: Higgs/EW (Jenny) : Today**

Jan 25: BSM (Frank)

Feb 8: Top/QCD (Akiya)

Feb 22: Higgs/EW (KF)

Clarification:

Software talks (organised by Frank&Akiya) will come in addition, as well as the overall software and physics coordination updates in the beginning of each meeting.

**Conveners' ML:**

[ild-physics-conveners@desy.de](mailto:ild-physics-conveners@desy.de)

***Use this mailing list to send your talk request.***

## ***Subgroup meetings***

need to be reactivated.