Discussion on the FCC report

Heather Gray, Roberto Contino

Outline of the FCC document

Chapter 1: the SM Higgs boson

Editors: H. Gray, M. Mangano, G. Zanderighi,
[additional experimental co-editors to be identified ?]

- *Production cross sections at 100TeV*
- *Extrapolation of precision on Higgs couplings*
- ...

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Chapter 1: the SM Higgs boson

Q: How well can we measure the Higgs couplings ?
How well can we test the SM ?

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Chapter 2: Pair Higgs production

Editor: G. Panico [experimental co-editors to be identified ?]

- *ggF production*
- *VBF production*
- *ttHH*
- ...

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Chapter 2: Pair Higgs production → Q: How well can we measure the Higgs self interaction ?

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Chapter 3: Higgs and Higgses beyond the SM

Editors: D. Curtin, A. Katz, M. Ramsey-Musolf

- *Exotic Higgs production and decays*
- *Heavy Higgses (production and detection)*
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Chapter 3: Higgs and Higgses beyond the SM → Q: Which scenarios with heavy Higgses can be probed, and how well ?

Can we probe EWBG at the FCC ?

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More details on the Chapter on Pair Higgs production

[on behalf of G. Panico]

1) ggF production

i) bbγγ [Contino, Englert, Yao, Panico, Son, Spannowsky]

assess precision on the SM cross section and on the Higgs trilinear coupling as a function of key parameters (b-tagging efficiency, jet energy resolution, jet energy resolution, background modeling systematic, etc ...)

ii) bbWW, bbZZ, bb$\tau\tau$ [Papaefstathiou, ...]

iii) bbbb

iv) rare decays (bbμμ, ...) [Papaefstathiou, ...]

2) VBF production *goal will be that of probing Higgs unitarization and thus testing strength of EWSB dynamics*

3) tthh (?)

- Next deadline: End of December *outline of document must be finalized, studies should be all ongoing and progressing*

- Final deadline for the document: End of February *(in time to be presented at the FCC plenary workshop in Rome in April)*

- Where will the document appear: ?
  -- on the Archive
  -- on a journal (?)