

# **BSM Sub-group Status Report**

**Oct 5, 2016**

**Jacqueline Yan (KEK)**

**On behalf of the BSM sub-WG**

# Recent BSM sub-group activities

**(1) M. Chera :** Working on "point 5" (gaugino pair production) analysis

- [http://agenda.linearcollider.org/event/6662/contributions/32487/attachments/26699/40819/mchera\\_LCWS15.pdf](http://agenda.linearcollider.org/event/6662/contributions/32487/attachments/26699/40819/mchera_LCWS15.pdf)
- re-using analysis to evaluate Particle Flow implementation in SGV w.r.t. DBD data
- Will show results at ILD meeting later on

**(2) J. Yan et al :** Measurement of Higgsino mass and cross sections

- Detail report given at today's meeting

**(3) S. Lehtinen:** SUSY Parameter extraction based on results in (2).

- Scaled result of 500 GeV to 250, 350 GeV and H20 scenario

**(4) T. Tanabe, M. Habermehl et al :** WIMP Search

will hold vidyo meeting next Wed (10/12) to discuss plans for WIMP studies

**(5) M. Berggren et al:** co-annihilation (STC) analysis

will re-present ICHEP talk later today

# Meeting of BSM conveners for LCWS

## Conveners

Keisuke Fujii (KEK)      keisuke.fujii@kek.jp

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Roberto Franceschini (CERN)   roberto.franceschini@cern.ch

Jacqueline Yan (KEK) (chair)   jackie@post.kek.jp

## We Discussed....

- general goals/strategy
- topics,    who will give summary talk
- sent out calls for abstracts and invitations for talks
- Arranging joint sessions with Higgs/EW WG

**We plan to submit a document to the MEXT (ILC Advisory Panel) to demonstrate the potential for new physics discovery at the ILC**

# ***The ILC's Potential for Discovering New Particles*** Follow up to the ICFA letter

Document Supporting the ICFA Response Letter to the ILC Advisory Panel

The purpose of this document is to provide in-depths material supporting statements on the ILC's discovery potential for new particles sketched out in the answer of ICFA to the ILC Advisory Panel of MEXT, taking into account LHC Run II development. From slides of K. Fujii

- Target: Particle physicists (a version for the MEXT ILC Advisory Panel will be prepared based on this) **We are working on it !**
- Length: 25 - 30 pages **1<sup>st</sup> rough draft for light Higgsino search has been done**
- Deadline: originally the end of summer 2016, but since X750 is gone and no immediate action seems to be expected, we could postpone it a little bit: **1st rough draft by Sep. 30. and a 1st presentable draft by the Morioka WS.**

## **Proposals for turning some (or all?) of bi-weekly “light Higgsino meetings” into meeting for entire BSM sub-group**

### Comments:

- Can we really gather enough members from each study to contribute to BSM sub-group meeting?
- At present stage, each study group should need dedicated time at least 2 times a week
- Maybe we could hold irregular BSM sub-group meetings?

# **Additional Material**

## If new physics signals seen / not seen at 13 TeV LHC

	Precision Higgs	Precision Top	Other Indirect Methods	Direct Searches
SUSY				
Compositeness				
DM				
...				

**We need physics studies that backup the table and make it fully convincing.**

- Prepare contents in each cell
- Dark Matter and SUSY studies ongoing
- Combined (global) analyses of Higgs/Top/New Physics
- Involve theorists

## **Explanation of “history” of ILC side**

- **In Dec, 2016 , ICFA sent a letter to the ILC Advisory Panel (MEXT)**
- **It was pointed out that we need to strengthen the part which demonstrate the potential of new physics search**  
**→ a follow-up document**
- **LCC physics deputy requested this issue to be focused on at LCWS BSM sessions**
- **Decided on goals at LCWS2015 in Whistler**
- **At LCWS2016 in Morioka, we shall review the progress and move towards finalizing the draft for the document**