

Discussion: How could ILC influence LHC triggers?

Our first report gave many examples of

1. how LHC+ILC data interpreted together could give new insights
2. how ILC data could be fed back into the LHC data analyses

All of this could **in principle** be done even after the completion of LHC data taking (although it will certainly work better if both machines are alive simultaneously).

Already in the very first discussion about LHC/ILC studies, it was realized that an even clearer argument for concurrent running could be made if a scenario should arise where information from ILC can be used to modify LHC triggers and therefore optimize the acceptance for certain new physics signals.

In those first discussions some people felt that constructing such a scenario might be too artificial.

Nevertheless, this question came back to us by people who read our first report.

Should we make another attempt to work into this direction?

In order to make it a success (given limited human resources) we should identify **one** promising scenario to work with

We should find a **small team** consisting at least of

1. a theory expert for the chosen scenario
2. an LHC trigger (simulation) expert
3. an ILC contact person

It is clear that in particular without person #2 the project will fail.

Identifying a scenario

2 suggestions from J. Ellis:

„Suppose that the LC discovers a (meta)stable massive charged particle, such as a stau in a model with a gravitino LSP. It might be that the LHC experiments would/could modify their trigger and/or even their TOF systems so as to collect these more efficiently.“

„Alternatively, suppose that the LC discovers a massive charged particle that decays rapidly into a lighter neutral particle with a very small mass difference, as occurs in models with a neutralino LSP in the coannihilation region. Perhaps the LHC experiments would/could modify their lepton p_T triggers (replacing them by some other event characteristic? at the expense of some other triggers?) so as to collect these more efficiently.“

Identifying a scenario

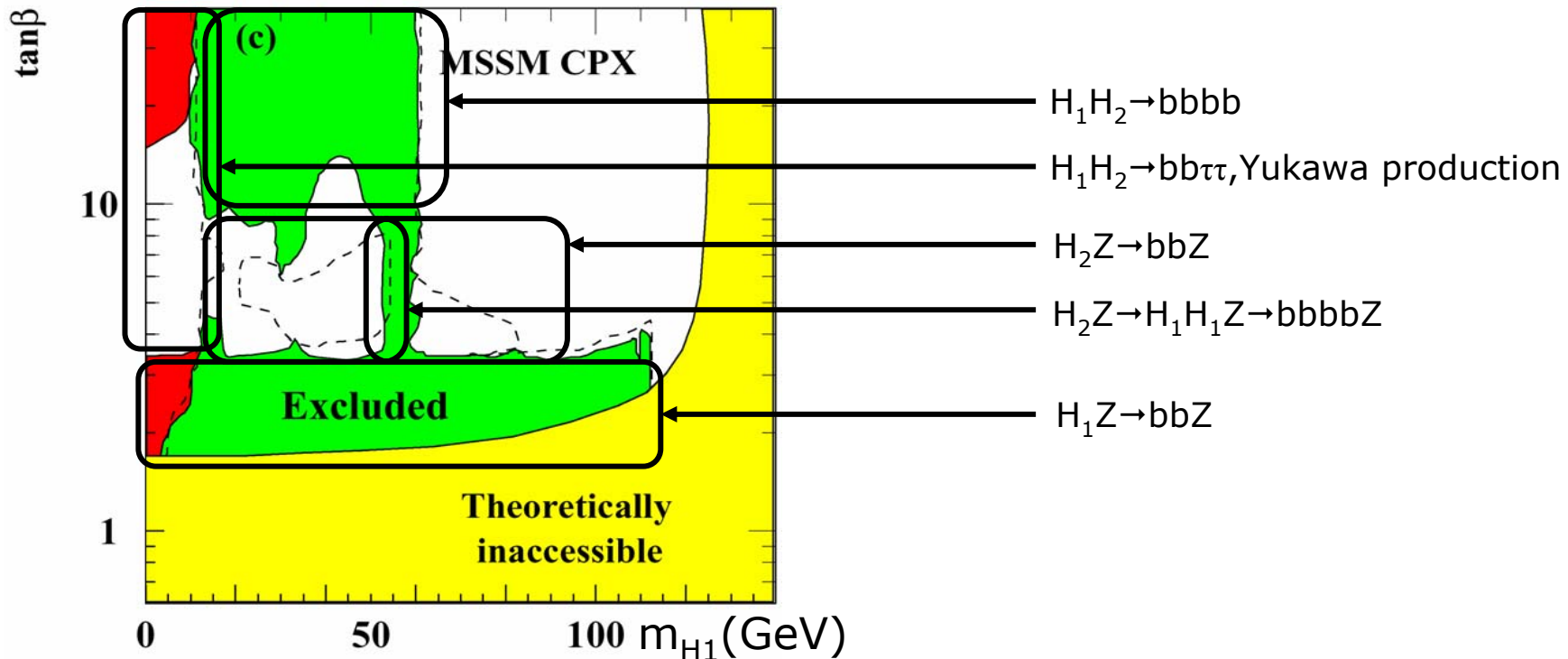
Another idea:

MSSM Higgs sector with CP-violation

LEP cannot exclude a very light (mainly CP-odd) Higgs

Detection of H_2 seems guaranteed at LHC and ILC but H_1 may be more difficult.

Question: could LHC see a low-mass (20-50) GeV $b\bar{b}$ resonance if ILC tells its mass?



Your input: