

Higgs Pair Production at Colliders

Monday 27 April 2015 - Thursday 30 April 2015

**<p>Mainz Institute for Theoretical Physics
Johannes Gutenberg University</p>**

Scientific Programme

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We aim for relaxed and informal workshop, with tons of discussions. The speakers have been instructed to be provocative (almost obnoxious, if required). Our motto goes as "Rather than stressing previous work we should discuss the ideas that would (hopefully) lead to everyone's next paper". In that spirit we have collected some questions which we would like to discuss at the workshop. Also the speakers would probably add their own.</div>

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1) How large can the $h(125)$ self-coupling and the hh XS be in concrete models? Can other $hhXX$ couplings be accessed (i.e: $t\bar{t}hh$, $VVhh$)?</div>

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2) How do hh searches complement with h couplings measurements from boosted h + jet and off-shell h ?. How does hh production help to constrain the sign of the top Yukawa coupling?</div>

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3) How fast do New Physics contributions to hh production (i.e: top partners) decouple?</div>

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4) What is the foreseeable future of radiative corrections and MC generators for $gg \rightarrow hh$?</div>

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5) Which is the major bottleneck for EXP analysis with $t\bar{t}b\bar{b}$ as a background ($b\bar{b}WW$, $b\bar{b}\tau\tau$)?</div>

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6) Are SM + resonant searches comprehensive enough?</div>

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7) What is the status of other productions modes (VBF, Vhh , $t\bar{t}hh$) HL-LHC and the corresponding accuracy in MC generators and EW/QCD corrections? </div>

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8) Are there any new channels available at HL-LHC?</div>

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9) Do hh searches benefit from larger energy or from larger luminosity?</div>

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10) Which are the prospects for the next generation of colliders (ILC, FCC- hh , etc)?</div>

