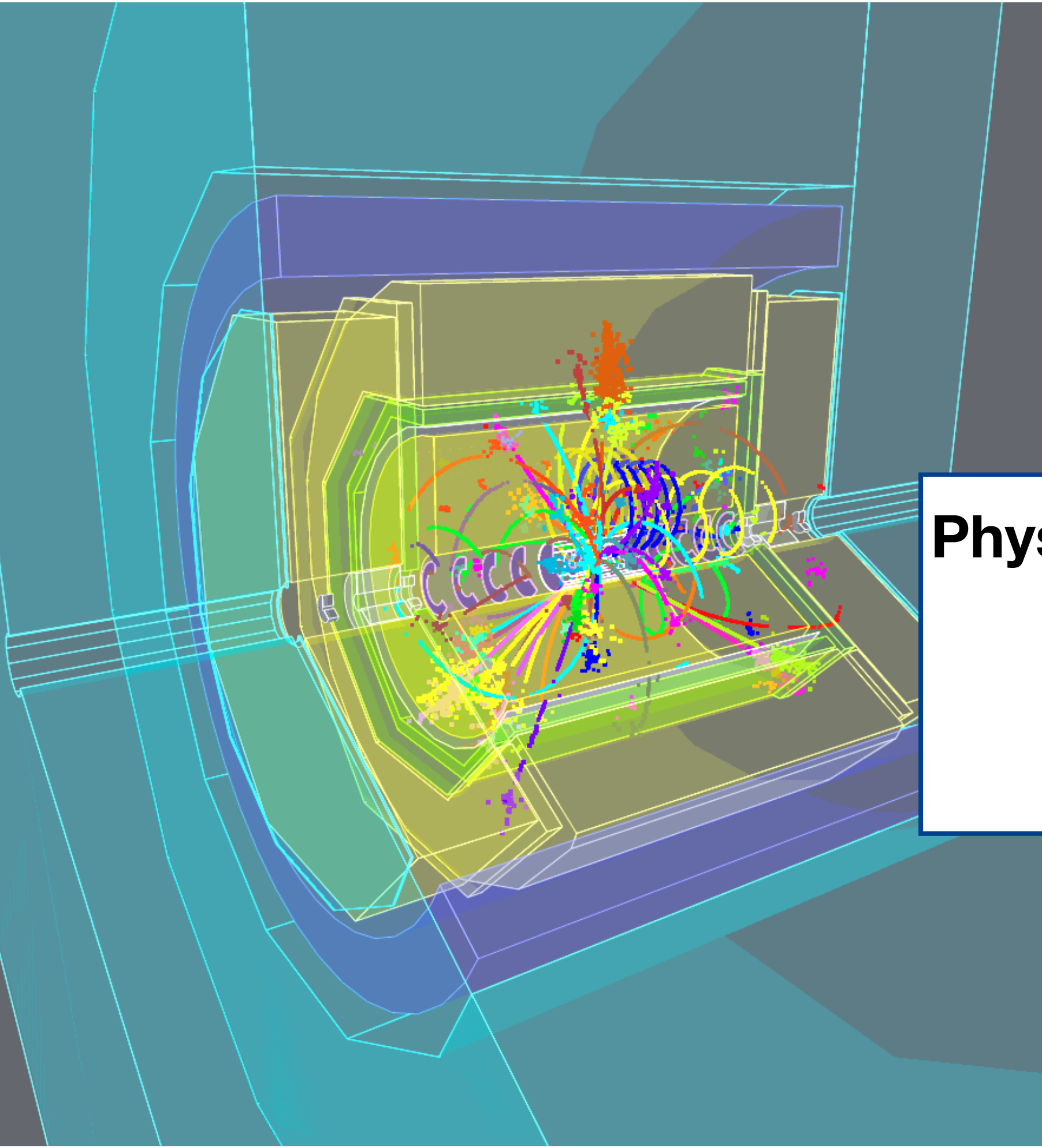


# Physics Benchmarks for the IDR

J. List  
DESY

ILD SW/ANA Meeting  
June 5, 2019



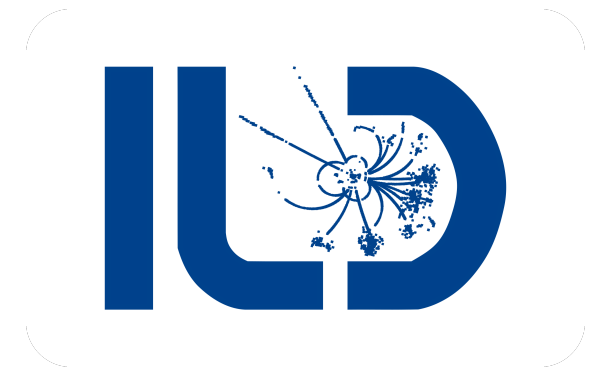
# Status in IDR



1.3	Physics Benchmarks	7
1.3.1	Hadronic Branching Ratios of the Higgs Boson	7
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1.3.5	$\tau$ polarisation, in $e^+e^- \rightarrow \tau^+\tau^-$	14
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1.3.9	$A_{FB}$ and $A_{LR}$ from $tt \rightarrow bbqql\nu$	19
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1.3.12	WIMP Discovery Reach and Characterisation in the Mono-Photon Channel	22

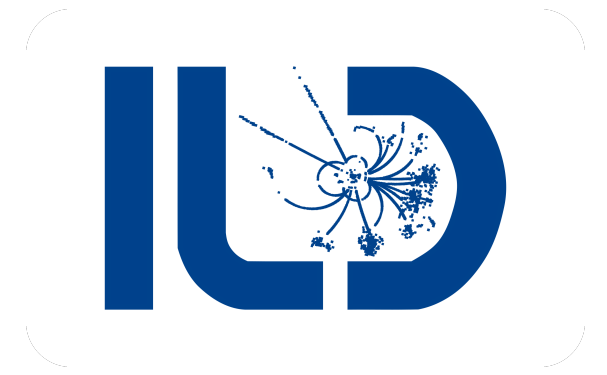
Draft as of Sunday has been circulated to  
analyzers, reviewers, physics conveners  
=> got some, but awaiting more feed-back!

# Status of Analyses



- individual status, names of involved people, plots, notes, references, can be found on ILD confluence pages (Physics WG -> Benchmarks for Optimisation -> select analysis)
  - **for 10 (out of 12) benchmarks: main analyses ~ done**
    - ee -> bb/tt : still need to do extract  $A_{FB}$  and  $A_{LR}$  uncertainties
    - extra Higgs search: still iterating final plot selection / understanding some features
    - **3-4 benchmarks are still lacking some (partially) cheated reference performance**
      - ee -> bb/tt
      - Higgs mass
      - gammaZ
  - **2 analyses still need work**  
**(on main analysis as well as on cheated reference performance)**
    - low-delta-M Higgsinos: still optimising selection, but progressing well
    - mono-photon WIMP search: problem with BeamCal background map in large detector samples, currently reprocessing relevant MCs
- => hope for IDR input by end of June**

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**Overall, this is very good progress in the last months - many thanks to all analyzers for their effort!**



# Git repositories for analyses

---

- in the past: doing badly concerning the preservation of code as a prerequisite for reproducibility of results
- **for IDR benchmarks, submission of code to ILDAAnaSoft is mandatory!**
- current status:
  - **3 analyses: ~up-to-date on ILDAAnaSoft**
  - **2 analyses: link to other github project => also ok**
  - **3 analyses: last commit 2-3 months ago :-)**
  - **4 analyses: last commit in Oct/Nov 2018!!! :-(((**



# Git repositories for analyses

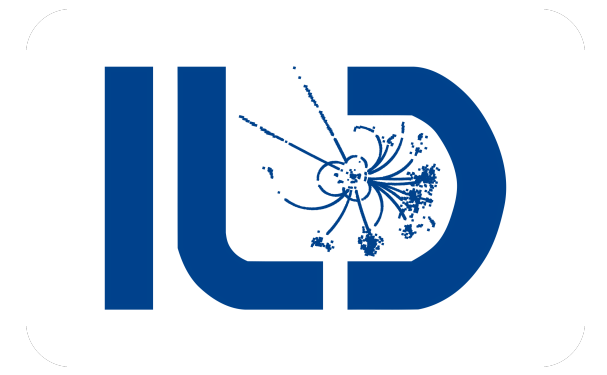
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**Please everybody:  
upload your up-to-date analysis code!**

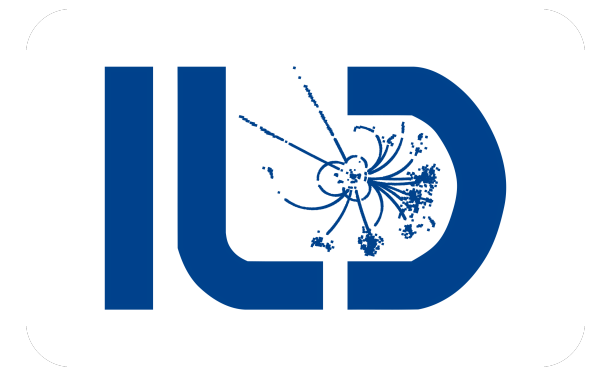


# ILD Notes and Review



- each benchmark needs to be documented in at least an public ILD note (some aim at a journal paper instead)
- status (based on received information & confluence pages):
  - 4 analyses: complete draft, mainly awaiting response from reviewers
  - 7 analyses: at least sketchy drafts available
  - 1 analysis: no draft at all linked from confluence, no information :-)
- analyzers:
  - *please complete the drafts quickly now*
  - post a pdf on your confluence page (overleaf links often don't work!)
  - keep contact to your referee(s) (send draft, ask for comments, remind, ...)
- reviewers:
  - please send comments to note drafts, and to IDR draft
  - *ask your analyzers for input, if needed!*
  - give feed-back to Physics Coordinators & PSB
    - when note ready for circulation in ILD
    - or in case of problems....

# ILD Notes and Review

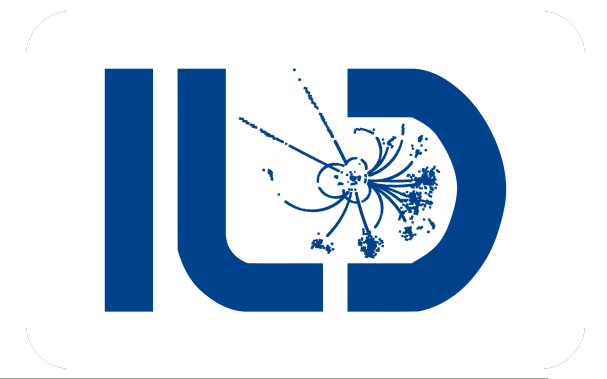


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**Let's please all be pro-active on this,  
and we'll get this done til end of June as planned!**



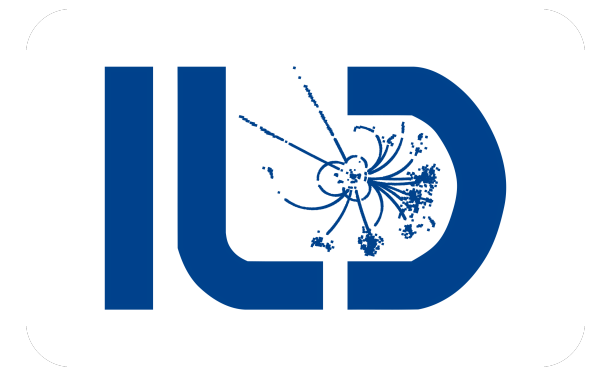
A quick round through the analyses  
- your comments on status of review!



- **Higgs mass from  $H \rightarrow bb$ : Junping (Frank S.)**
- **$H \rightarrow \mu^+ \mu^-$ : Shin-ichi (Ivanka, Filip)**
- **$H \rightarrow$ invisible: Yu (Marcel)**
- **$e^+e^- \rightarrow \tau^+ \tau^-$ : Keita, Daniel (Mikael)**
- **$e^+e^- \rightarrow$  nunu qqqq: Jakob (Taikan)**
- **$e^+e^- \rightarrow$  gamma Z: Takahiro (Matthew)**
- **$e^+e^- \rightarrow bb / tt$ : Adrian / Yuichi (Marcel)**
- **$H \rightarrow bb/cc/gg$ : Masakazu (Hiroaki, Frank S.)**
- **low delta M Higgsinos: Swathi (Akimasa)**
- **WIMPs in mono-photon channel: Ryo (Moritz, Filip)**
- **extra Higgses in  $e^+e^- \rightarrow Zh$ : Yan (Junping, Kiyotomo)**

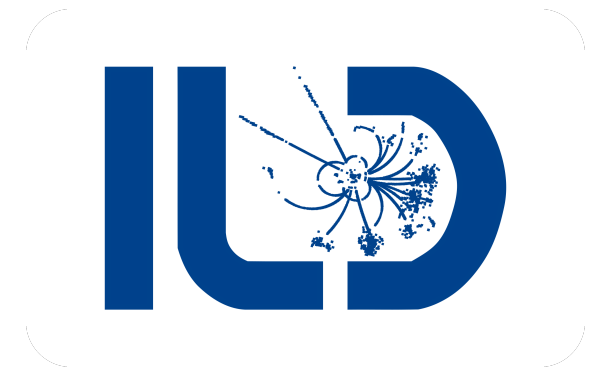
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---



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- first version of corresponding IDR section has been circulated to analysers, referees, conveners  
**=> please give your feed-back!**
- missing for final approval for IDR:
  - **uploading of code to github**
  - **complete analysis notes**
  - **go-ahead from reviewers to circulate note to ILD**
- aim to have this by **end of June**  
(in parallel to IDR draft ready for circulation in ILD)

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**... we achieved a lot, let's pull this through!**