



Report from Physics WG

Keisuke Fujii
on behalf of the Physics WG
January 31, 2018

Subgroup Activities

news from Higgs/EW WG (Junping/Graham)

- new analyses:
 - ➔ $BR(H \rightarrow \gamma Z)$: Kazuki Fujii, master student in U. Tokyo
 - ➔ WW scattering at 1 TeV: Jakob Beyer, PhD student in Technical Univ. of Dresden (mostly working at DESY)
- new results (preliminary):
 - ➔ $BR(H \rightarrow WW^*)$ at 250 GeV: reported by Mila, using fully hadronic modes -> significant improvement on global fit is promising
 - ➔ Higgs CP: reported by Vladimir, using vwh , $h \rightarrow \tau \tau$ channel -> promising to reconstruct full τ -momentum without IP determined from Z decay
- updated results: $BR(H \rightarrow \mu \mu)$ by Shin-ichi, LCWS17 proceedings, arXiv: 1801.07966; Higgs CP by Daniel, internal reviewing process
- contributions to validation of new samples: $H \rightarrow \tau \tau$ (Daniel), ISR photon in 2f (Ryo), JET in uds (Yu), $H \rightarrow \mu \mu$ (Shin-ichi), 6f $vvqqqq$ at 1 TeV (Jakob)

status of publications

ongoing preparation for journal papers:

- D.Jeans, Higgs CP using $e+e- \rightarrow Zh, h \rightarrow \tau\tau$ @ $E_{cm}=250$ GeV; draft available, ILD internal reviewing, 2nd round, already OK with one referee, hopefully completed very soon.
- C.Duerig, M.Kurata, J.Tian, et al, Higgs self-coupling using $HH \rightarrow bbbb/bbWW^*$ @ $E_{cm}=500/1000$ GeV; 0th version since early 2017; plan to finish remaining double counting work and and to submit to journal before summer.
- T.Ogawa, et al, anomalous ZZH coupling @ $E_{cm}=250/500$ GeV; internal draft available; going to ILD reviewing (Jenny, Ivanka) soon; currently short pause for PhD thesis writing

backup

ongoing analyses

- Tomohisa Ogawa (Sokendai & KEK), PhD student, “anomalous hVV couplings”, 100% of time, to finish thesis by mid of 2018
- Yumi Aoki (Sokendai & KEK), Master student, “h γ Z coupling”, 50% of time, not included in master thesis, to finish this study by mid of 2018
- Daniel Jeans (KEK), “h \rightarrow tau tau”, currently focusing on paper
- Masakazu Kurata (KEK), “hh \rightarrow bbWW^{*}”, currently working on paper together with Claude, Junping, etc.
- **) Yu Kato (U. Tokyo), Master student, “h \rightarrow invisible”, 100% of time, to finish thesis by end of this year
- Kazuki Fujii (U. Tokyo), Master student, “h \rightarrow gamma Z”, 30% of time, to finish thesis by May of 2018
- Junping Tian (U. Tokyo), “Higgs mass”, 10% of time
- *Aliakbar Ebrahimi (DESY), “Higgs mass”, 20% of time*
- Shin-ichi Kawada (DESY), “h \rightarrow mu mu”, 100% of time
- Jakob Beyer (DESY), Master student, “quartic gauge couplings”, 100% of time, to finish thesis by Oct. 2018
- Mila Pandurovic (U. Belgrade), “h \rightarrow WW^{*}”
- Graham Wilson (Kansas U.), “Higgs mass”
- *Vladimir Bocharnikov (Moscow Engineering Physics Institute), PhD student, “vvh, h \rightarrow tau tau”*

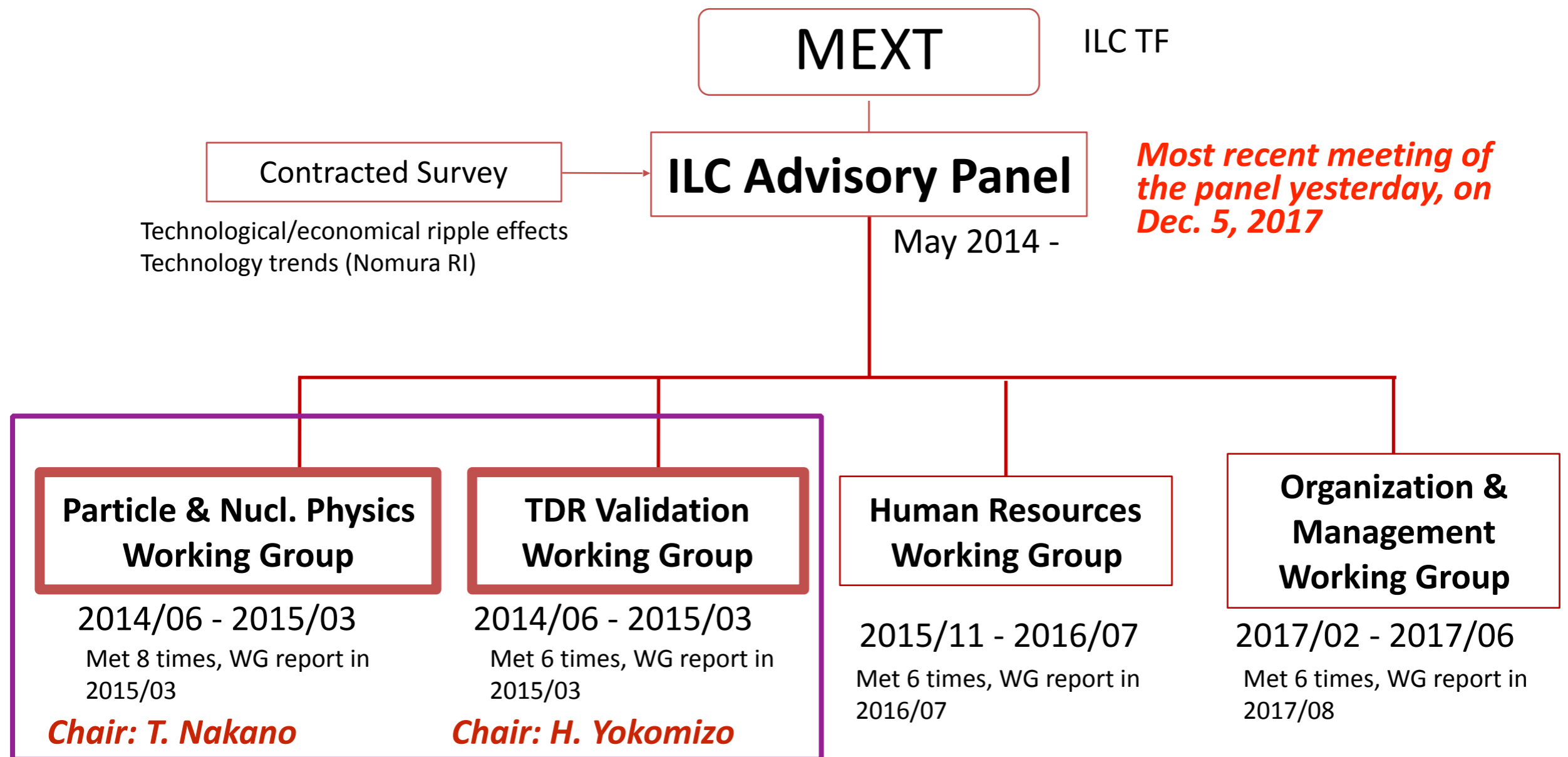
Top/QCD subgroup (Ryo/Roman)

<input checked="" type="checkbox"/>	$ee \rightarrow bb$	LAL	arXiv:1709.04289
<input type="checkbox"/>	$ee \rightarrow$ heavy fermion pair	LAL	
<input checked="" type="checkbox"/>	Top CPV couplings	IFIC/LAL/RWTH	arXiv:1710.06737
<input checked="" type="checkbox"/>	$ee \rightarrow tt$ full leptonic Matrix element method	LAL/Tohoku	Yo submitted his master thesis.
<input checked="" type="checkbox"/>	$t \rightarrow ch$	Warsaw	Filip is finalising his analysis and going to present at the coming SW/ANA meeting
<input checked="" type="checkbox"/>	theoretical studies of a global fit	IFIC	Evaluated the sensitivity of runs with beam polarisations to scalar and tensor operators.
<input type="checkbox"/>	Top width measurement from top momentum @ 350GeV	Tohoku	Yuto Eda (master student) started.
<input type="checkbox"/>	Top mass, $ee \rightarrow tt\gamma_{ISR}$	IFIC	Pablo started without the photon reconstruction at first (as of last Christmas).
<input type="checkbox"/>	$ee \rightarrow tt$ EFT	IFIC	Marcel et al are finalizing a paper draft on CP violating couplings.
<input type="checkbox"/>	Top mass threshold, interpretation	MPP-MPG	
<input type="checkbox"/>	$ee \rightarrow tt$ full hadronic, continuum	LAL/UCL/Tokyo	
<input type="checkbox"/>	$t \rightarrow c\gamma$	MPP	
<input type="checkbox"/>	AFB in $t\bar{t}$ or $b\bar{b}$	IFIC	
<input type="checkbox"/>	QCD e.g. α_s	open	

MEXT Review

ILC Advisory Panel

Set up in May 2014 under MEXT ILC Task Force to investigate various issues concerning the possibility of hosting the ILC in Japan



Most recent meeting of the panel yesterday, on Dec. 5, 2017

New round will start from January 2018.

The 1st Meeting of the TDR Validation WG happened yesterday, on

January 30, 2018

Agenda:

- *General remark from the secretariat*
- *ILC project status (development since the last round of the WG)*
- *The ILC Machine Staging Report 2017:
Shin Michizono*
 - *Overview (open)*
 - *Cost (closed: confidential)*
 - *Potential issues pointed out in the 1st round of the TDR validation WG (closed: confidential)*
- *AOB*

***The 2nd Meeting of the Particle & Nuclear
Physics WG will happen on***

February 5, 2018

***The 2nd Meeting of the TDR Validation WG
will happen on***

March 2, 2018

Physics focus schedule

Jan. 31: Top/QCD (Jenny)

Feb. 7: Higgs/EW (KF)

Feb. 14: BSM/NP (Frank)

Feb. 21: Ichinoseki ILD Meeting

weekly Wednesday meetings (at least) till Ichinoseki
→ 3-week turn-around too fast for physics focus -
take flexible attitude

Conveners' ML:

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Use this mailing list to send your talk request.