

# Status Report

Tokyo Institute of Technology



Masahiro Tanaka

22 Apr 2014



# New generator cut for NCbkg

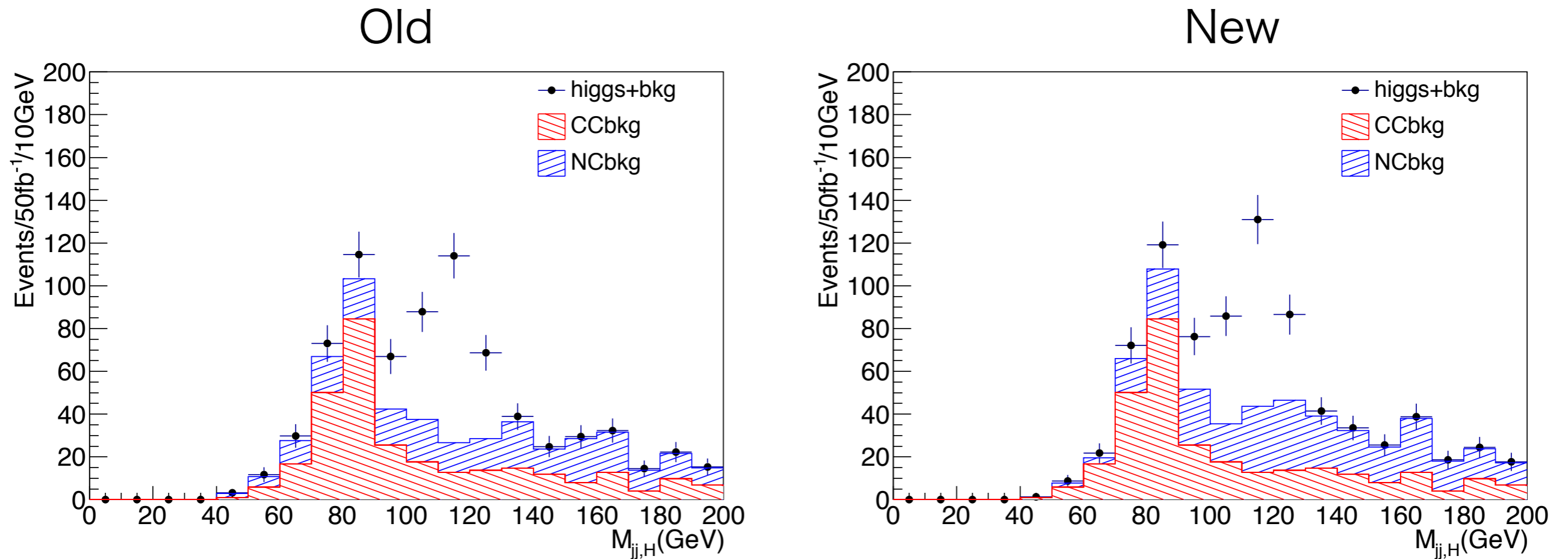
- This generator cut is suggested by Uta
- Differences between old and new generator cut of NCbkg
  - $pt_j > 10 \text{ GeV} \rightarrow 12 \text{ GeV}$ ,  $pt_b > 10 \text{ GeV} \rightarrow 15 \text{ GeV}$ ,  $pt_l > 1 \text{ GeV} \rightarrow 0.01 \text{ GeV}$
  - $|\eta_{aj}| < 5 \rightarrow 5.5$ ,  $|\eta_{ab}| < 5 \rightarrow 4$ ,  $|\eta_{aa}| < 5 \rightarrow 10$ ,  $|\eta_{al}| < 5 \rightarrow 4 < |\eta_{al}| < 10$
  - $M_{jj} > 60 \text{ GeV} \rightarrow 80 \text{ GeV}$ ,  $M_{bb} > 60 \text{ GeV} \rightarrow 100 \text{ GeV}$
- Events with undetected electrons are made
- $p e^- \rightarrow e^- j j j / h$  for NCbkg

Table of samples

	$\sigma(\text{pb})$	Number of samples	$\frac{N}{\sigma}(\text{fb}^{-1})$
New	28	1.5M	53.6
Old	83	4.2M	50.6

# Comparison of new and old generator cut

- kT algorithm with  $\Delta R=0.9$  is used
- Same cuts are used
- CChbb and CCbkg are same



Number of NCbkg in signal region [100,130]GeV

Old

New

$42.5 \pm 6.52 \rightarrow 81.2 \pm 8.71$

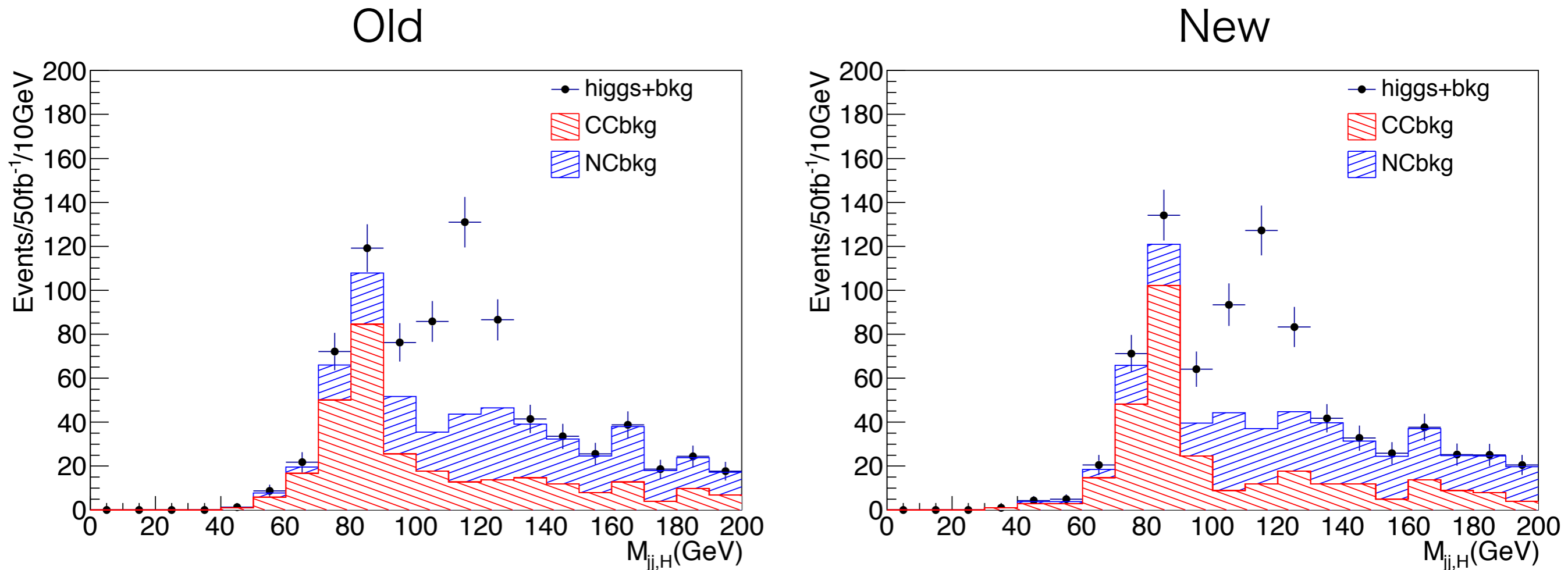
# New parameter for PGS

---

- Difference between old and new parameter for PGS
  - tracking coverage  $|\eta| < 3 \rightarrow 4.7$
  - ECal coverage  $|\eta| < 3 \rightarrow 4.7$
- Electron tagged region is expanded

# Comparison of old and new PGS parameter

- Electron veto cut is used
- Electron tagged region is expanded but the Events of CChbb and NCbkg increase



Events in signal region [100,130]GeV

CChbb	CCbkg	NCbkg
177.5→177.9	44.3→38.4	81.2→87.7
Old	New	

# Table of samples

	$\sigma$ (pb)	Number of samples	$\frac{N}{\sigma}$ (fb <sup>-1</sup> )
CChbb	0.072	0.1M	1390
CCbkg	5.9	0.3M	50.8
NCbkg	83	4.2M	50.6

Old

# Table of cuts

Nbjet	$\geq 2$
Njet	$\geq 3$
missing ET(GeV)	$> 20$
total ET(GeV)	$> 100$
Nelectron	0
$Q^2(\text{GeV}^2)$	$> 400$
$y$	$< 0.9$
light jet $\eta$	$> 2$
W mass(GeV)	$> 130$
top mass (GeV)	$> 250$