

A traditional Chinese Yin-Yang symbol is positioned in the top left corner. It features a black and white swirling design with a grainy, ink-like texture, set against a white background.

CEPC Higgs Combination towards CDR

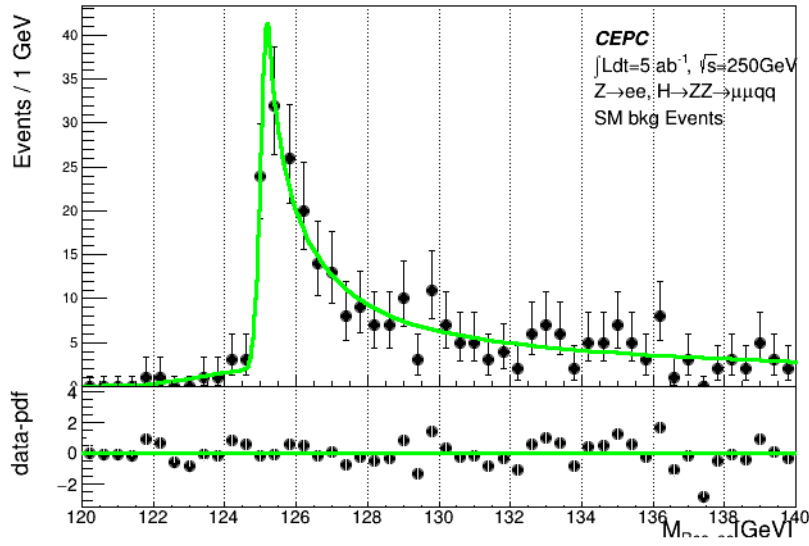
ZhangKaili* WangJin LiuZhen

2017-10-23

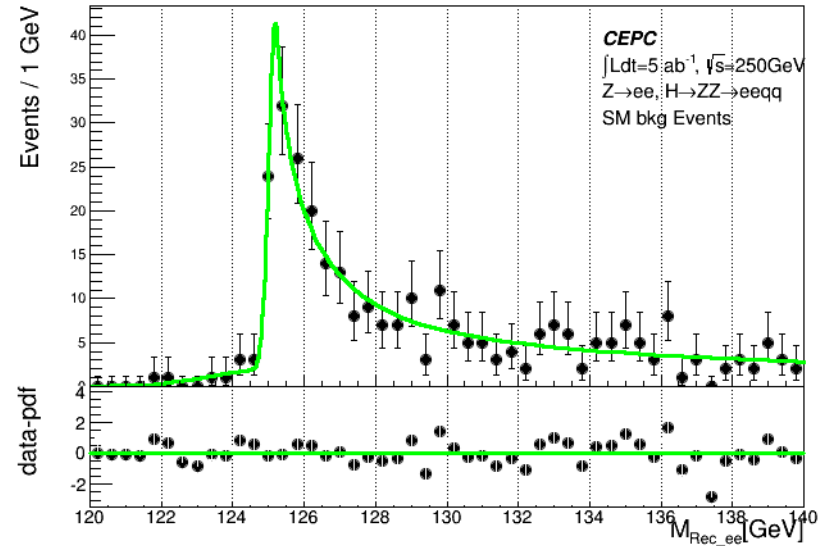
- Fix bugs on plots.
- Now all the plots can be found in the git server
combination/plots/ folder.

ZZ plots

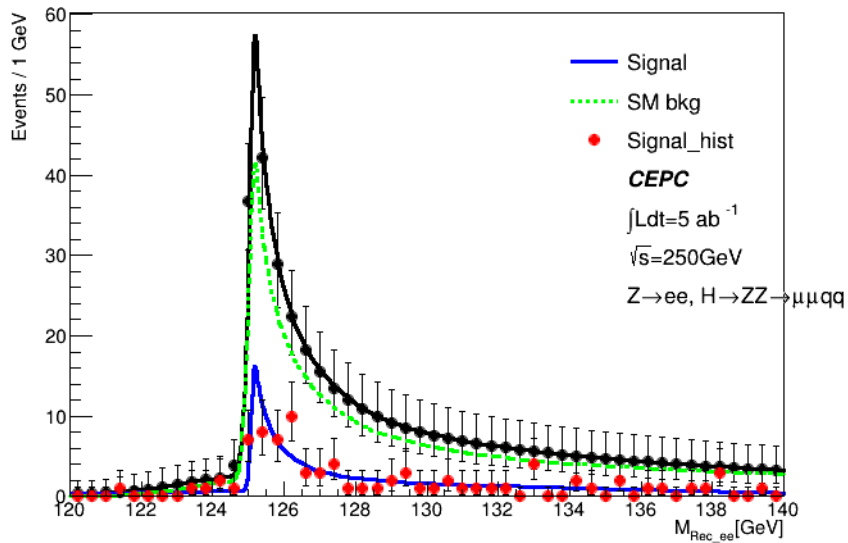
Z \rightarrow ee, H \rightarrow ZZ \rightarrow $\mu\mu$ qq, SM bkg Events



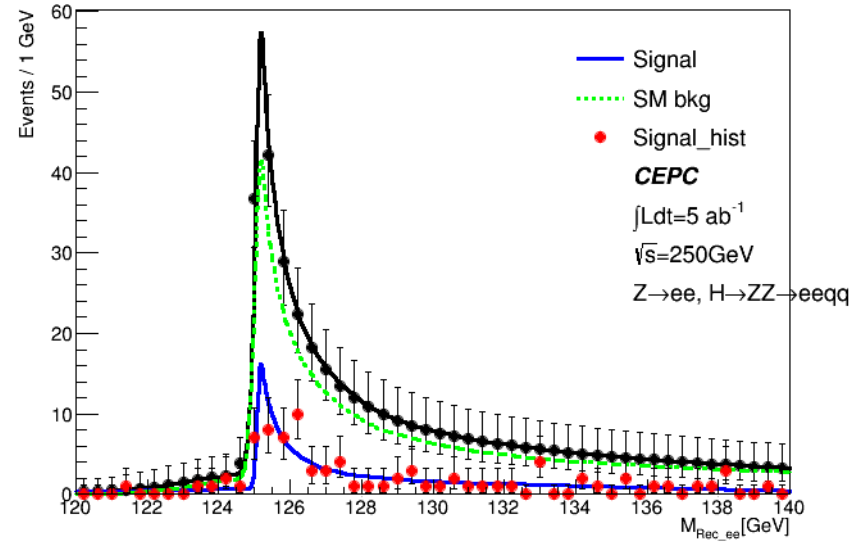
Z \rightarrow ee, H \rightarrow ZZ \rightarrow eeqq, SM bkg Events



Z \rightarrow ee, H \rightarrow ZZ \rightarrow $\mu\mu$ qq



Z \rightarrow ee, H \rightarrow ZZ \rightarrow eeqq



fit Result



	PreCDR	Current
$\sigma(ZH)$	0.51%	0.50%
$\sigma(ZH) * Br(H \rightarrow bb)$	0.28%	{+0.27% -0.27%
$\sigma(ZH) * Br(H \rightarrow cc)$	2.2%	{+3.49% -3.47%
$\sigma(ZH) * Br(H \rightarrow gg)$	1.6%	{+1.44% -1.44%
$\sigma(ZH) * Br(H \rightarrow WW)$	1.5%	{+1.21% -1.20%
$\sigma(ZH) * Br(H \rightarrow ZZ)$	4.3%	{+5.29% -5.15%
$\sigma(ZH) * Br(H \rightarrow \tau\tau)$	1.2%	{+0.68% -0.67%
$\sigma(ZH) * Br(H \rightarrow \gamma\gamma)$	9.0%	{+8.28% -8.19%
$\sigma(ZH) * Br(H \rightarrow \mu\mu)$	17%	{+15.9% -15.0%
$\sigma(vvH) * Br(H \rightarrow bb)$	2.8%	{+3.11% -3.10%
$Br(H \rightarrow inv.)$	0.28%	0.18%
$\sigma(ZH) * Br(H \rightarrow Z\gamma)$	\	4σ ({+21.0% -21.4%})

7κ	Scan Result	Pre_CDR
κ_b	{+1.21% -1.21%	1.2%
κ_c	{+2.16% -2.17%	1.6%
κ_g	{+1.45% -1.46%	1.5%
κ_γ	{+4.29% -4.38%	4.7%
$\kappa_\mu = \kappa_\tau$	{+1.27% -1.27%	1.3%
κ_Z	{+0.134% -0.134%	0.16%
κ_W	{+1.23% -1.23%	1.2%

In general, fit result is consistent with results of Pre_CDR and Individual studies.

Results for individual channels

	Tot	Z->ee	Z->mm	Z->qq	Z->vv		
Inclusive $\sigma(ZH)$	0.50%	2.1%	0.9%	0.65%	\		
$\sigma(ZH) * Br(H \rightarrow bb)$	{+0.27% -0.27%}	{+1.26% -1.26%}	{+1.02% -1.01%}	{+0.46% -0.46%}	{+0.40% -0.40%}		
$\sigma(ZH) * Br(H \rightarrow cc)$	{+3.49% -3.47%}	{+15.2% -15.0%}	{+10.8% -10.6%}	{+16.6% -16.6%}	{+3.93% -3.89%}		
$\sigma(ZH) * Br(H \rightarrow gg)$	{+1.44% -1.44%}	{+8.28% -8.21%}	{+5.48% -5.43%}	{+7.16% -7.16%}	{+1.56% -1.55%}		
$\sigma(ZH) * Br(H \rightarrow WW)$	{+1.21% -1.20%}	{+2.87% -2.82%}	{+2.65% -2.61%}	\	{+1.34% -1.34%}		
$\sigma(ZH) * Br(H \rightarrow ZZ)$	{+5.29% -5.15%}	{+40.9% -39.6% eeqq	{+23.4% -22.4% mmqq	{+7.61% -7.28%}	\	{+35.5% -34.3% eeqq	{+8.53% -8.14% mmqq
$\sigma(ZH) * Br(H \rightarrow \tau\tau)$	{+0.68% -0.67%}	\	{+2.76% -2.73%}	0.76%	{+1.79% -1.78%}		
$\sigma(ZH) * Br(H \rightarrow \gamma\gamma)$	{+8.28% -8.19%}		{+27.4% -26.5%}	{+13.0% -12.9%}	{+11.8% -11.6%}		

Channels Table

Signal		Observed Events	Who takes charge	Last update	Signal		Observed Events	Who takes charge	Last update	
Z	H				Z	H				
H->Inclusive					vvH(WW fusion)					
vv	Inclusive	164170	Libo	2017.8	vv	bb	10256	LiangHao	2017.9	
μμ	Inclusive	29552			H->WW					
ee	Inclusive	22200			H->qq					
ee	bb	7655	Baiyu	2017.7	μμ	μμνν	52	Libo	2017.4	
	cc	351				eννν	36			
	gg	1058				εννν	105			
μμ	bb	11108		2017.9		ee	ενqq			663
	cc	567					μνqq			717
	gg	1762			μννν		44			
qq	bb	176542		2017.7	vv	eννν	22			
	cc	8272				εννν	81			
	gg	25293				ενqq	612			
vv	bb	70608		H->ZZ						
	cc	3061	vv	μμjj	179	Yuqian	2016.9			
	gg	9633	vv	eejj	64					
H->γγ,Zγ					μμ			ννjj	200	
ll	γγ	93	Feng	2015	ee			eejj	55	
vv		309	Yitian	2017.4	ee	mmjj	81			
qq		822	H->ll							
qq	Zγ	219	Weimin	2017.9	μμ	ττ	2068	Dan	2017.9	
H->Invisible					qq		36023			
qq	vvv	202	MoXin	2017.7	vv		12456			
ee		8			μμ	qq	71			
μμ		18				ee	1			
						μμ	4	Zhenwei	2017.8	
					vv	14				

Observed=tagged signal after cutflow and in fit range.
 All events are weighted and normalized to $5ab^{-1}$.