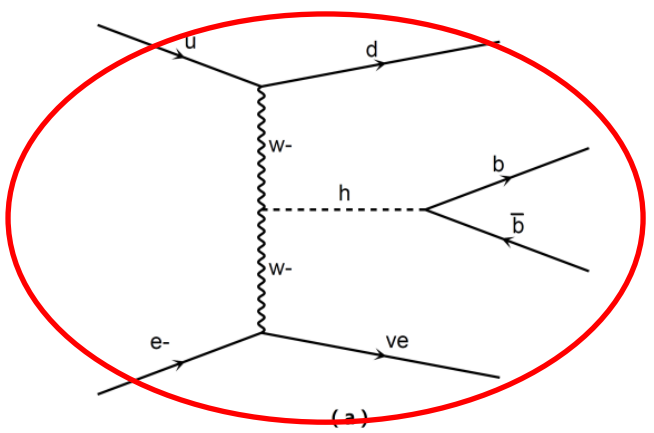
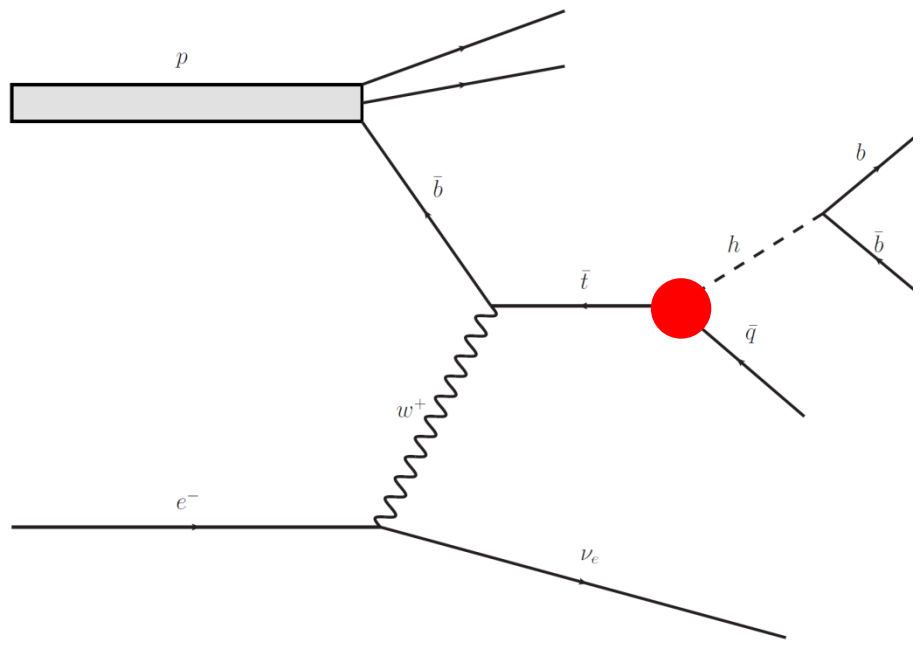


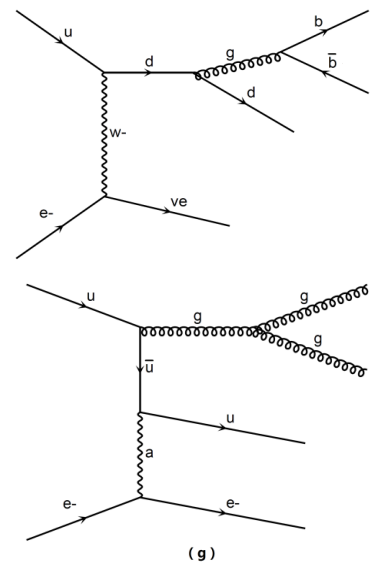
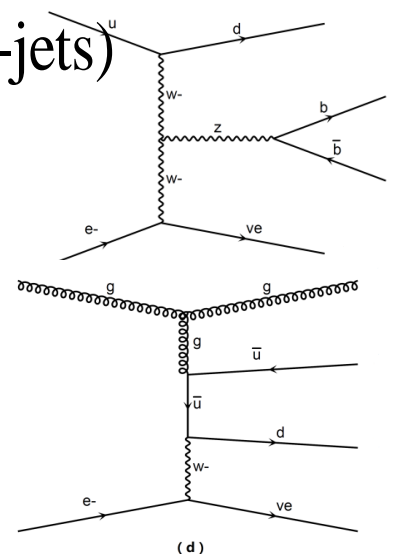
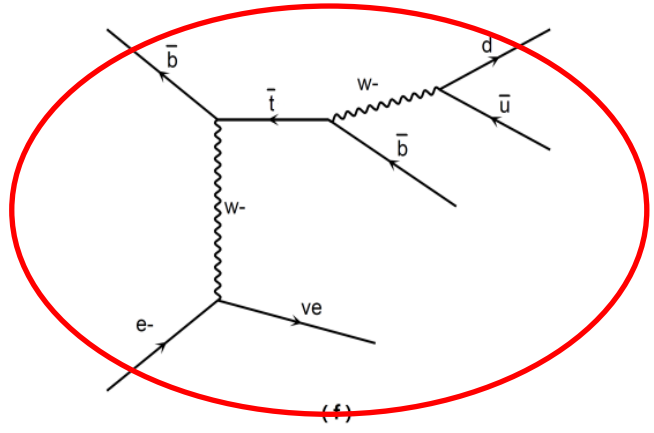
Exploring the Anomalous Top-Higgs FCNC Couplings at the electron proton colliders

Hao Sun (孙昊)

signal.I: $e p \rightarrow \nu_e \bar{t} \rightarrow \nu_e h \bar{q} \rightarrow \nu_e b \bar{b} \bar{q}$



$E_T^{\text{miss}} + 0l + \geq 3\text{jets, (with at least 2 tagged B-jets)}$



signal.I: $e p \rightarrow \nu_e \bar{t} \rightarrow \nu_e h \bar{q} \rightarrow \nu_e b \bar{b} \bar{q}$

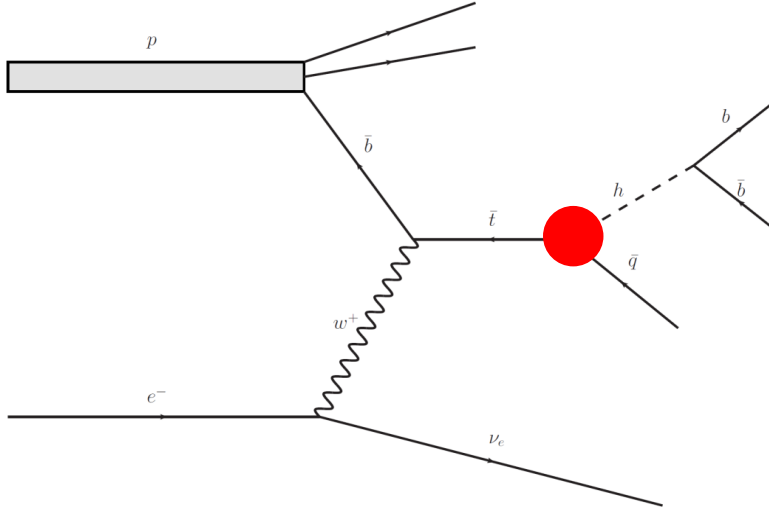
LHeC_card OK

FCCeh_card OK

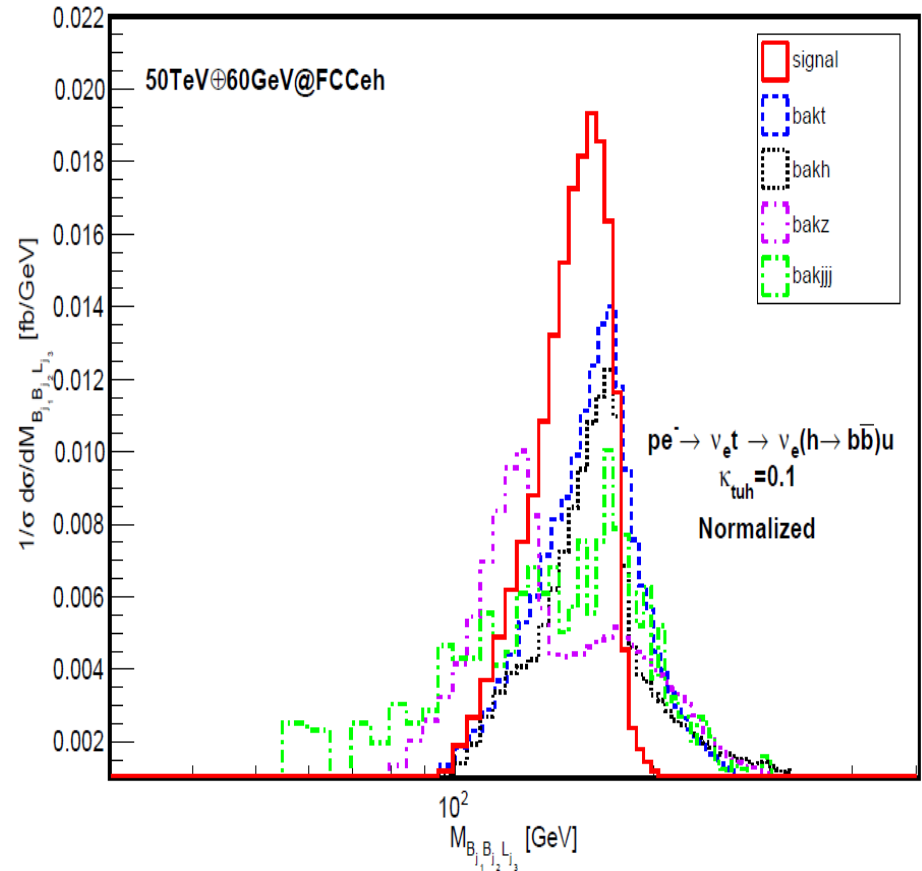
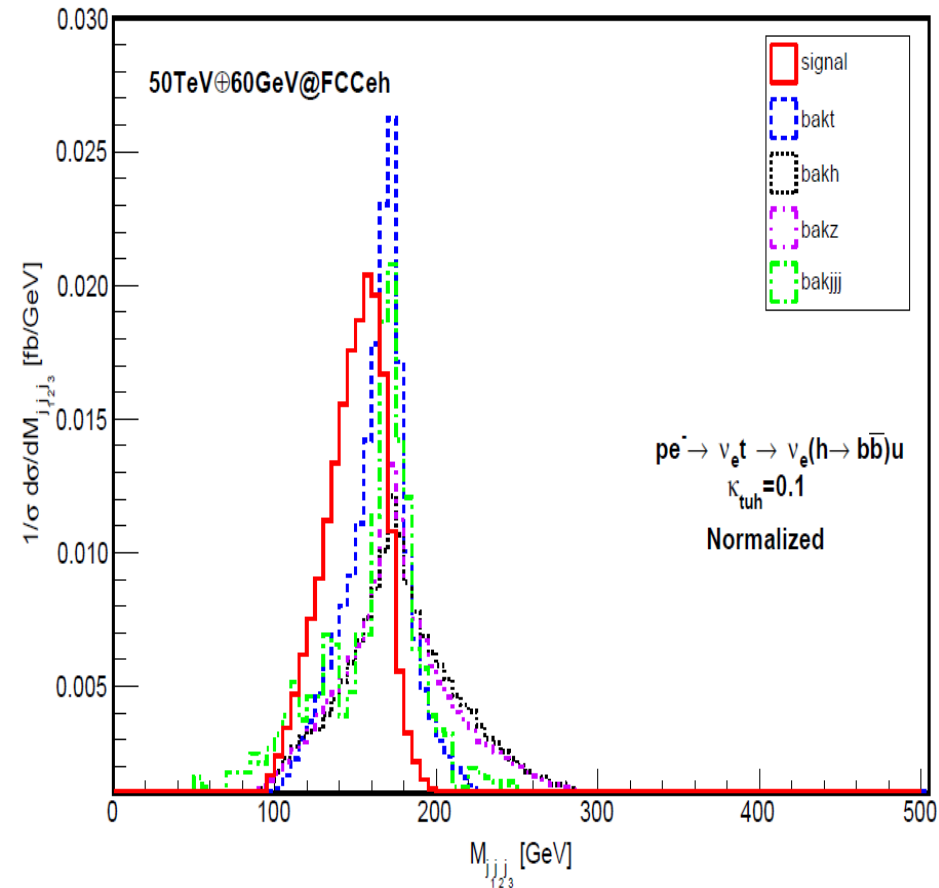
Question 1. about CTag?

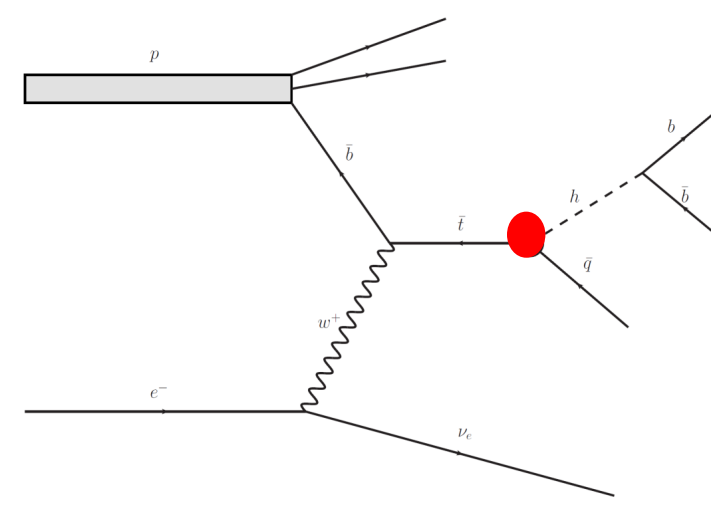
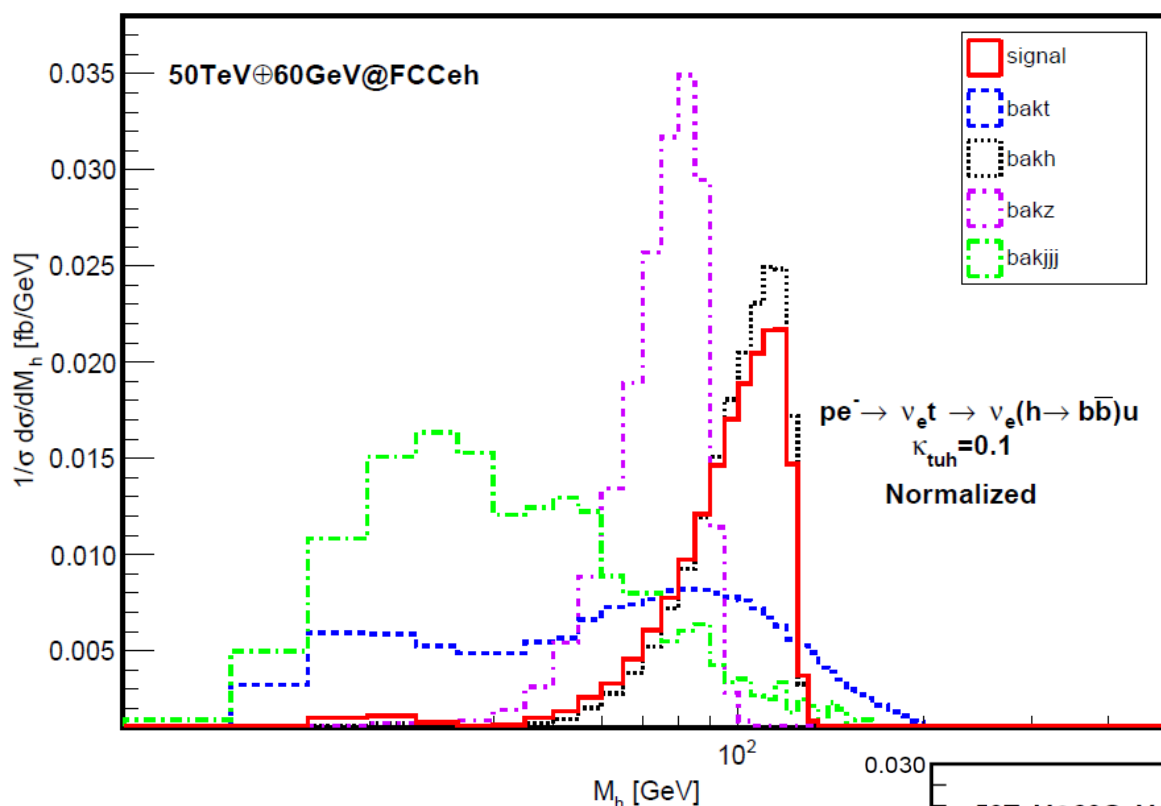
btagJet[i]=pJet[i]->BTag; correct

ctagJet[i]=pJet[i]->CTag; not correct

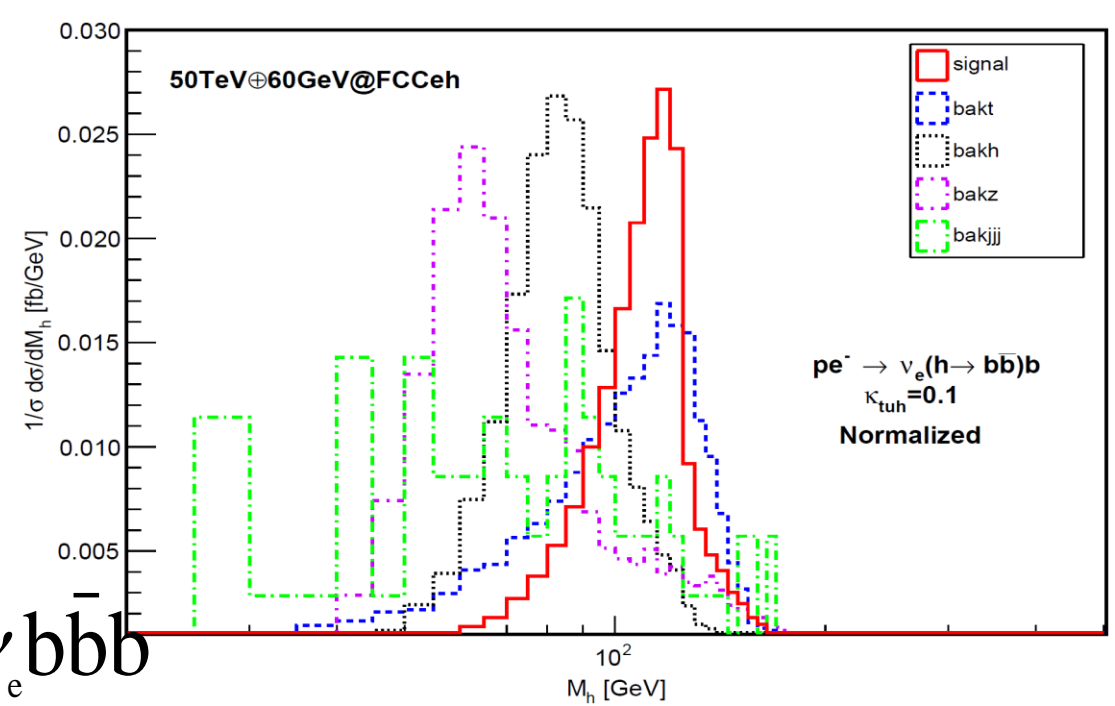
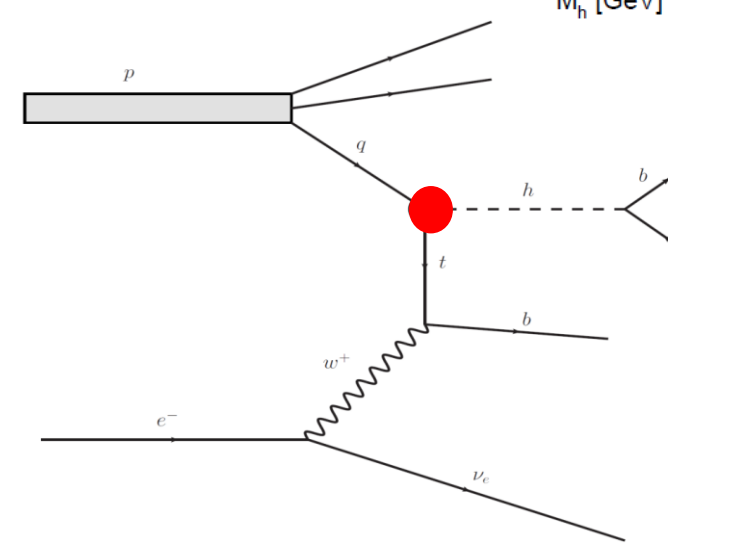


Question 2. Top?





Question 3. Higgs?



signal.II: $e-p \rightarrow \nu_e h b \rightarrow \nu_e b b b$

7TeV \oplus 60GeV@LHeC	σ_{ini}	≥ 3 jets with	$M_{\text{BBj}} \in$	$M_{\text{h}} \in$	$ht \in$	others
unpol.	Basic cuts	2 tagged Bjets	[110, 180]	[105, 130]	[0, 185]	
signal.I[$\kappa_{\text{tqh}} = 0.1$]	7.96	1.05	0.87	0.48	0.41	0.4
bakt	1321	60.9	33.82	6.4	3.66	3.33
bakh	Question 4. Single Top BG?					
bakz						
bakjjj	21730	14.7	6.87	0.70	0.26	0.22
Total BG	-	101.4	46.83	8.49	4.88	4.4
$\mathcal{SS}[1\text{ab}^{-1}]$	-	3.28	4.0	5.19	5.77	5.9
50TeV \oplus 60GeV@FCC-eh	σ_{ini}	≥ 3 jets with	$ht \in$	$M_{\text{h}} \in$	$M_{\text{jjj}} \in$	others
unpol.	Basic cuts	2 tagged Bjets	[60, 175]	[90, 125]	[125, 170]	
signal.I[$\kappa_{\text{tqh}} = 0.1$]	64.24	18.06	11.92	7.9	7.38	6.24
bakt	10660	1296.45	328.2	74.2	52.15	34.24
bakh	507.9	168.36	54.15	35.3	9.8	5.58
bakz	357	104.88	25.97	1.33	0.52	0.32
bakjjj	90070	203.20	41.79	1.98	1.44	1.08
Total BG	-	1772.88	450.11	112.8	63.91	41.22
$\mathcal{SS}[1\text{ab}^{-1}]$	-	13.54	17.7	23.3	28.66	30.0

7TeV \oplus 60GeV@LHeC	σ_{ini}	3 tagged	$p_{\text{T}}^{\text{B}_{j_3}} \in$	$M_{\text{h}} \in$	$p_{\text{T}}^{\text{B}_{j_2}} \in$
unpol.	Basic cuts	Bjets	[200, 480]	[100, 140]	[40, 140]
signal.II[$\kappa_{\text{tqh}} = 0.1$]	0.64	0.055	6.5×10^{-3}	5.28×10^{-3}	3.68×10^{-3}
bakt	1320	1.806	0	0	0
bakh	Question 5. Large Xsec or Less BG?				
bakz					
bakjjj	21730	0.261	0	0	0
Total BG	-	2.33	2.68×10^{-3}	0.837×10^{-3}	0.185×10^{-3}
$\mathcal{SS}[1\text{ab}^{-1}]$	-	1.14	3.1	3.71	4.02
50TeV \oplus 60GeV@FCC-eh	σ_{ini}	3 tagged	$p_{\text{T}}^{\text{B}_{j_3}} \in$	$\Delta R^{\text{hB}_{j_3}} \in$	$M_{\text{h}} \in$
unpol.	Basic cuts	Bjets	[265, 455]	[2.8, 3.5]	[95, 120]
signal.II[$\kappa_{\text{tqh}} = 0.1$]	3.085	0.54	0.083	0.071	0.044
bakt	10660.0	101.1	0	0	0
bakh	507.9	8.82	0.005	0.002	0.0007
bakz	357.0	3.9	0.035	0.010	0
bakjjj	90070.0	12.61	0	0	0
Total BG	-	126.4	0.04	0.012	0.0007
$\mathcal{SS}[1\text{ ab}^{-1}]$	-	1.51	10.5	13.3	16.70

