Higgs BR study status

ILC Physics & Software Meeting

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H. Ono (NDU)

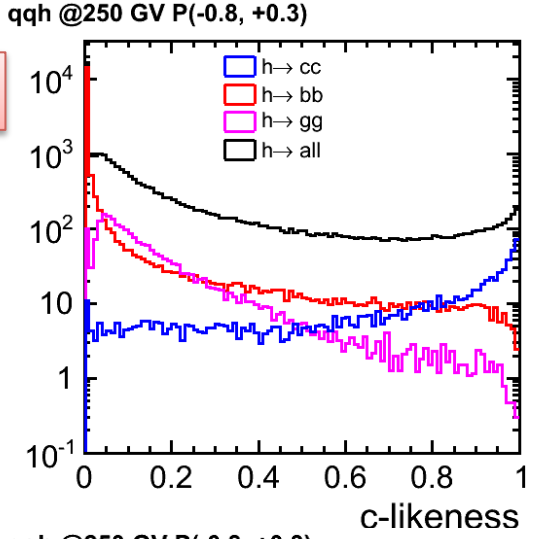
Current status

- Investigating qqh @250 GeV channels h→cc performance degradation from previous results.

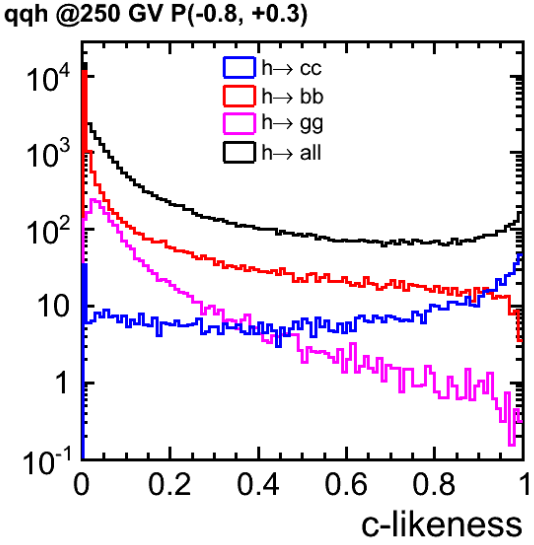
Comparison between LCFIPlus and LCFIVTX

C-likeness

LCFIPlus

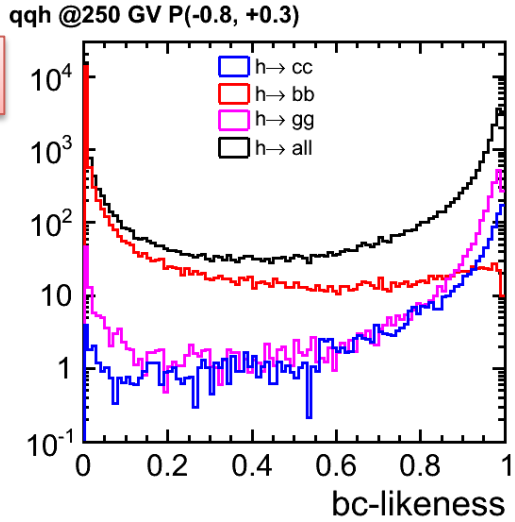


LCFIVTX

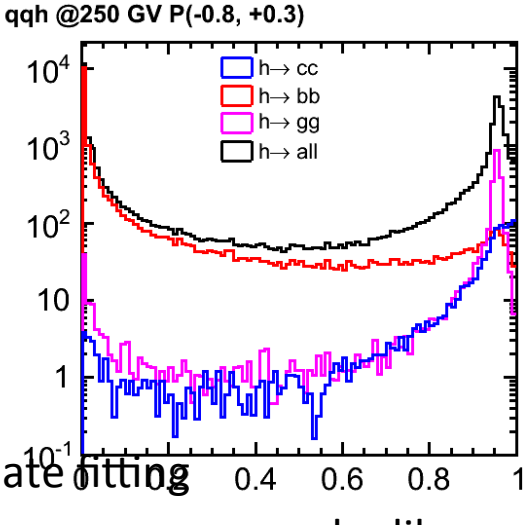


BC-likeness

LCFIPlus



LCFIVTX



Try to re-apply template fitting with LCFIVTX case

LCFIPlus reconstruction

Zh→qqh @250 GeV (L=250fb^{-1}, P(-0.8,+0.3)) forced 4 jet clustering with LCFIPlus

cuts	h->bb	h->cc	h->gg	h->others	2f	4f	1f_3f	aa_2f	ZH others
No cut	30,334	1,399	4,499	16,314	3.0×10^{7}	1.1×10^{7}	3.1×10^{8}	1.7×10^{8}	27,314
$\chi^2<10$	15,248	841	2,497	3,568	2,138,770	1,164,830	1.8×10^{8}	7.0×10^{7}	3,029
# of track>4	15,248	841	2,497	3,568	467,865	805,323	6,478	483	2,524
$-\mathrm{Log}_{10}(y34)<2.7$	15,126	836	2,485	3,561	247,536	793,883	3,225	148	2,497
Thrust<0.9	14,811	818	2,465	3,540	178,115	788,554	2,129	48	2,411
$\lvert\cos\theta_{thrust}\rvert<0.90$	13,103	726	2,179	3,107	131,351	547,542	858	24	2,113
85<Mz<100	11,505	656	1,931	2,415	93,514	395,171	518	22	1,851
120<Mh<135	11,327	645	1,875	2,307	85,063	365,816	435	22	1,819
# of isolep<2	11,274	642	1,866	2,233	84,436	357,332	393	22	237

Durham and LCFIVTX reconstruction

Zh→qqh @250 GeV (L=250fb^{-1}, P(-0.8,+0.3)) forced 4 jet clustering with LCFIVTX

cuts	h->bb	h->cc	h->gg	h->others	2f	4f	1f_3f	aa_2f	ZH others
No cut	30,334	1,399	4,499	16,314	3.0×10^{7}	1.1×10^{7}	3.1×10^{8}	1.7×10^{8}	27,314
$\chi^2<10$	15,327	844	2,495	3,576	2,128,590	1,132,610	1.8×10^{8}	7.0×10^{7}	2,934
# of track>4	15,327	844	2,495	3,576	564,717	805,755	6,542	501	2,535
$-\mathrm{Log}_{10}(y34)<2.7$	15,160	837	2,483	3,568	249,995	793,876	3,239	158	2,495
Thrust<0.9	14,839	819	2,462	3,547	178,826	788,531	2,135	46	2,410
$\lvert\cos\theta_{thrust}\rvert<0.90$	13,124	726	2,176	3,110	131,931	547,459	855	24	2,111
85<Mz<100	11,524	657	1,929	2,418	93,791	395,092	519	22	1,852
120<Mh<135	11,344	646	1,873	2,308	85,363	365,848	439	22	1,821
# of isolep<2	11,290	642	1,864	2,234	84,692	357,392	399	22	237

No significant difference is observed on cut efficiencies