Reconstruction request for qqh signal and backgrounds with the SDHCAL (ILD_l5_o2_v02)

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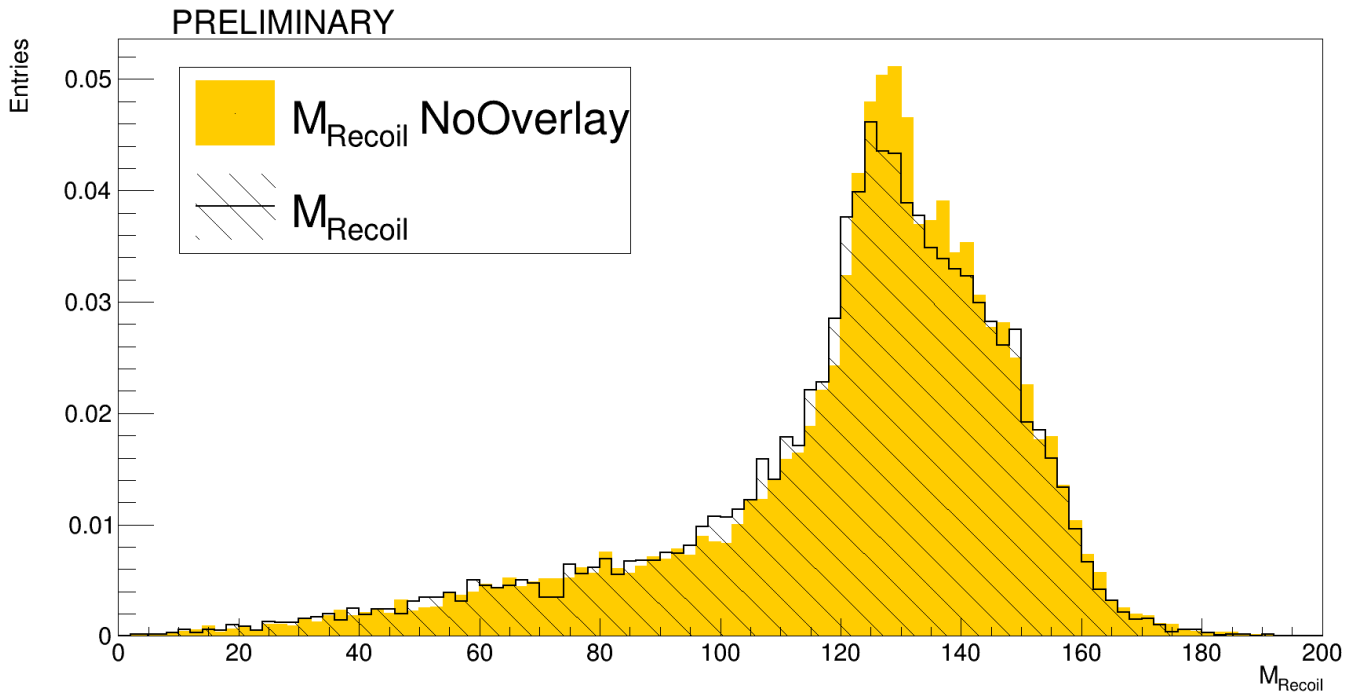

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- To compute the number of elements the Snowmass scenario have been used: L = 1150 fb in 10.5 years at $\sqrt{s} = 250 GeV$.

Polarization

To compute the number of events to request the polarization of the beam needs to be taken into account. The polarization of operation is $P(-80\%, +30\%)$ which results in the following factors for the total polarized samples:

$$eLpR = 58.5\% \quad eLpL = 31.5\%$$
$$eRpL = 3.5\% \quad eRpR = 6.5\%$$

Signal request

Process	eLpR (58.5%)	eRpL (3.5%)	eLpL (31.5%)	eRpR (6.5%)	Size
	σ_{Full} (fb) / NEvts / ReqEvts	σ_{Full} (fb) / NEvts / ReqEvts	σ_{Full} (fb) / NEvts / ReqEvts	σ_{Full} / NEvts / ReqEvts	
Pqqh	3.4303023e+02 / 211049	2.1948615e+02 / 8834	-	-	28.5 GB
Pqqh_aa	7.78678622e-01 / 479 / 10k	4.98233561e-01 / 20 / -	-	-	1.3 GB
Pqqh_az	5.24836252e-01 / 322 / 10k	3.35813810e-01 / 13 / -	-	-	1.3 GB
Pqqh_bb	1.99643594e+02 / 122830 / 100k	1.27740939e+02 / 5141 / 10k	-	-	14.3 GB
Pqqh_cc	9.91357365e+00 / 6099 / 10k	6.34314973e+00 / 255 / 10k	-	-	2.6 GB
Pqqh_e2e2	7.47805901e-02 / 46 / -	4.78479807e-02 / 1 / -	-	-	-
Pqqh_e3e3	2.15079954e+01 / 13232 / 10k	1.37617816e+01 / 553 / 10k	-	-	2.6 GB
Pqqh_gg	2.80941758e+01 / 17284 / 10k	1.79759157e+01 / 723 / 10k	-	-	2.6 GB
Pqqh_ww	7.34084692e+01 / 45164 / 50k	4.69700361e+01 / 1890 / 10k	-	-	7.8 GB
Pqqh_zz	8.98739203e+00 / 5529 / 10k	5.75053713e+00 / 231 / 10k	-	-	2.6 GB
Total					64 GB

Table 1: Full crossections σ_{Full}, number of events from the Snowmass scenario ($NEvts = L * \sigma_{Full} * f_{Pol}$; L = 1150 fb and f_{Pol} being the respective polarization factor), and the requested number of events per event and polarization. The last column is the estimated size of the total requested sample.

Background request

Process	eLpR (58.5%)	eRpL (3.5%)	eLpL (31.5%)	eRpR (6.5%)	Size
	σ_{Full} (fb) / NEvts / ReqEvts	σ_{Full} (fb) / NEvts / ReqEvts	σ_{Full} (fb) / NEvts / ReqEvts	σ_{Full} / NEvts / ReqEvts	
P2f_z_h	1.27965530e+05 / 78730792 / 1M	7.04167430e+04 / 2834273 / 1M	-	-	260 GB
P4f_sw_sl	1.02640160e+04 / 6314935 / 1M	8.66961490e+01 / 3489 / 10k	1.90531440e+02 / 69020 / 100k	1.90637490e+02 / 14250 / 20k	147 GB
P4f_sze_sl	1.42330980e+03 / 875691 / 1M	1.21939670e+03 / 49080 / 50k	1.15583340e+03 / 418700 / 400k	1.15720060e+03 / 86500 / 100k	202 GB
P4f_sznu_sl	4.53869760e+02 / 279243 / 300k	1.31219580e+02 / 5281 / 10k	-	-	40 GB
P4f_ww_h	1.48664200e+04 / 9146564 / 1M	1.36821530e+02 / 5507 / 10k	-	-	131 GB
P4f_ww_sl	1.87791450e+04 / 11553868 / 1M	1.73468290e+02 / 6982 / 10k	-	-	131 GB
P4f_zz_h	1.40506000e+03 / 864463 / 1M	6.06709780e+02 / 24420 / 30k	-	-	134 GB
P4f_zznu_sl	6.09878860e+02 / 375227 / 400k	2.61567200e+02 / 10528 / 10k	-	-	54 GB
P4f_zzorww_h	1.23892920e+04 / 7622511 / 1M	2.25568680e+02 / 9079 / 10k	-	-	131 GB
P4f_zz_sl	8.38079490e+02 / 515628 / 500k	4.66816440e+02 / 18789 / 20k	-	-	68 GB
Total					1.3 TB

Table 2: Full crossections σ_{Full}, number of events from the Snowmass scenario ($NEvts = L * \sigma_{Full} * f_{Pol}$; L = 1150 fb and f_{Pol} being the respective polarization factor), and the requested number of events per event and polarization. The last column is the estimated size of the total requested sample.

Final request

Process Name	Process ID	Polarization	Requested Events
Pqqh	I402011	eLpR	211049
Pqqh	I402012	eRpL	8834
P2f_z_h	I500010	eLpR	1000000 (1M)
P2f_z_h	I500012	eRpL	1000000 (1M)
P4f_sw_sl	I500105	eLpL	100000 (100k)
P4f_sw_sl	I500106	eLpR	1000000 (1M)
P4f_sw_sl	I500108	eRpL	10000 (10k)
P4f_sw_sl	I500107	eRpR	20000 (20k)
P4f_sze_sl	I500101	eLpL	400000 (400k)
P4f_sze_sl	I500102	eLpR	1000000 (1M)
P4f_sze_sl	I500104	eRpL	50000 (50k)
P4f_sze_sl	I500103	eRpR	100000 (100k)
P4f_sznu_sl	I500110	eLpR	300000 (300k)
P4f_sznu_sl	I500112	eRpL	10000 (10k)
P4f_ww_h	I500066	eLpR	1000000 (1M)
P4f_ww_h	I500068	eRpL	10000 (10k)
P4f_ww_sl	I500082	eLpR	1000000 (1M)
P4f_ww_sl	I500084	eRpL	10000 (10k)
P4f_zz_h	I500062	eLpR	1000000 (1M)
P4f_zz_h	I500064	eRpL	30000 (30k)
P4f_zznu_sl	I500078	eLpR	400000 (400k)
P4f_zznu_sl	I500080	eRpL	10000 (10k)
P4f_zzorww_h	I500070	eLpR	1000000 (1M)
P4f_zzorww_h	I500072	eRpL	10000 (10k)
P4f_zz_sl	I500074	eLpR	500000 (500k)
P4f_zz_sl	I500076	eRpL	20000 (20k)
Pqqh_aa	I402214	eLpR	10000 (10k)
Pqqh_az	I402215	eLpR	10000 (10k)
Pqqh_bb	I402209	eLpR	100000 (100k)
Pqqh_bb	I402218	eRpL	10000 (10k)
Pqqh_cc	I402210	eLpR	10000 (10k)
Pqqh_cc	I402219	eRpL	10000 (10k)
Pqqh_e3e3	I402216	eLpR	10000 (10k)
Pqqh_e3e3	I402225	eRpL	10000 (10k)
Pqqh_gg	I402211	eLpR	10000 (10k)
Pqqh_gg	I402220	eRpL	10000 (10k)
Pqqh_ww	I402212	eLpR	50000 (50k)
Pqqh_ww	I402221	eRpL	10000 (10k)
Pqqh_zz	I402213	eLpR	10000 (10k)
Pqqh_zz	I402222	eRpL	10000 (10k)

Open questions

- Storage element still undefined (asked by Akiya) CIEMAT or Lyon if it exists.
- Processes uncertain if they apply as background: *aa_2f ; aa_4f ; ae_3f ; ae_5f*