

WEEKLY REPORT

----Siqi Li

$\mu\mu\gamma\gamma$ Channel Cut Flow

	$\mu\mu\gamma\gamma$	2f_e2e2	4f_zz_l	4f_zz_sl	2f_e3e3	2f_qq	4f_size_l	4f_ww_
Generated	100000	1000000	499503	999618	1000000	1999052	1200000	999008
$N_{g2, N_{m2}}$	87003	76804	46996	203538	2009	24325	36103	8674
$E_{\gamma} > 35\text{GeV}$	84467	18817	4224	5362	435	1799	24009	333
$E_{\gamma} > 35\text{GeV}$	84467	18817	4224	5362	435	1799	24009	333
$10\text{GeV} < p_{T\gamma} < 70\text{GeV}$	83664	16371	3675	4748	376	1604	18780	297
$30\text{GeV} < p_{T\gamma} < 100\text{GeV}$	78218	10089	2430	2917	268	1104	356	192
$110\text{GeV} < M_{\gamma\gamma} < 140\text{GeV}$	76128	3865	582	776	101	548	79	26
$80\text{GeV} < M_{\mu\mu} < 110\text{GeV}$	66418	1581	261	347	7	1	3	8
Efficiency	0.66418	0.001581	0.000522519	0.000347133	0.000007	5.00237E-07	0.0000025	8.00794E-06
$\int L$	5000	5000	5000	5000	5000	5000	5000	5000
X-sections (fb)		5532.71	97.81	556.49				
scaled to 5 ab-1		43736.07255	255.5381049	965.8791158				
			0.005	0.0229				

$\mu\mu\gamma\gamma$ Channel Cut Flow

	Signal	Background						
	$\mu\mu\gamma\gamma$	4f_ww_sl	4f_ww	4f_zzorww_l	e1e1h_X	nnh_X	qqh_X	mumu $\gamma\gamma$
Generated	100000	1200000	999008	1200000	99953	233656	399781	100000
$N_{g,2}, N_{m,2}$	87003	63437	8674	30233	87300	4411	396605	87003
$E_{\gamma} > 35 \text{ GeV}$	84467	755	333	1812	3652	215	7330	84467
$E_{\gamma} > 35 \text{ GeV}$	84467	755	333	1812	3652	215	7330	84467
$10 \text{ GeV} < p_{T\gamma 1} < 70 \text{ GeV}$	83664	687	297	1585	3226	214	7154	83664
$30 \text{ GeV} < p_{T\gamma 2} < 100 \text{ GeV}$	78218	447	192	926	2383	196	6510	78218
$110 \text{ GeV} < M_{\gamma\gamma} < 140 \text{ GeV}$	76128	90	26	119	1222	177	4944	76128
$80 \text{ GeV} < M_{\mu\mu} < 110 \text{ GeV}$	66418	6	8	14	1	8	4	66418
Efficiency	0.66418	0.000005	8.00794E-06	1.16667E-05	1.00047E-05	3.42384E-05	1.00055E-05	0.66418
$\int L$	5000	5000	5000	5000	5000	5000	5000	5000
X-sections (fb)								
scaled to 5 ab-1								

Since the efficiency of other background is really low, it is ok for us only consider e2e2 background

$\mu\mu\gamma\gamma$ Channel Cut Flow with Another Data

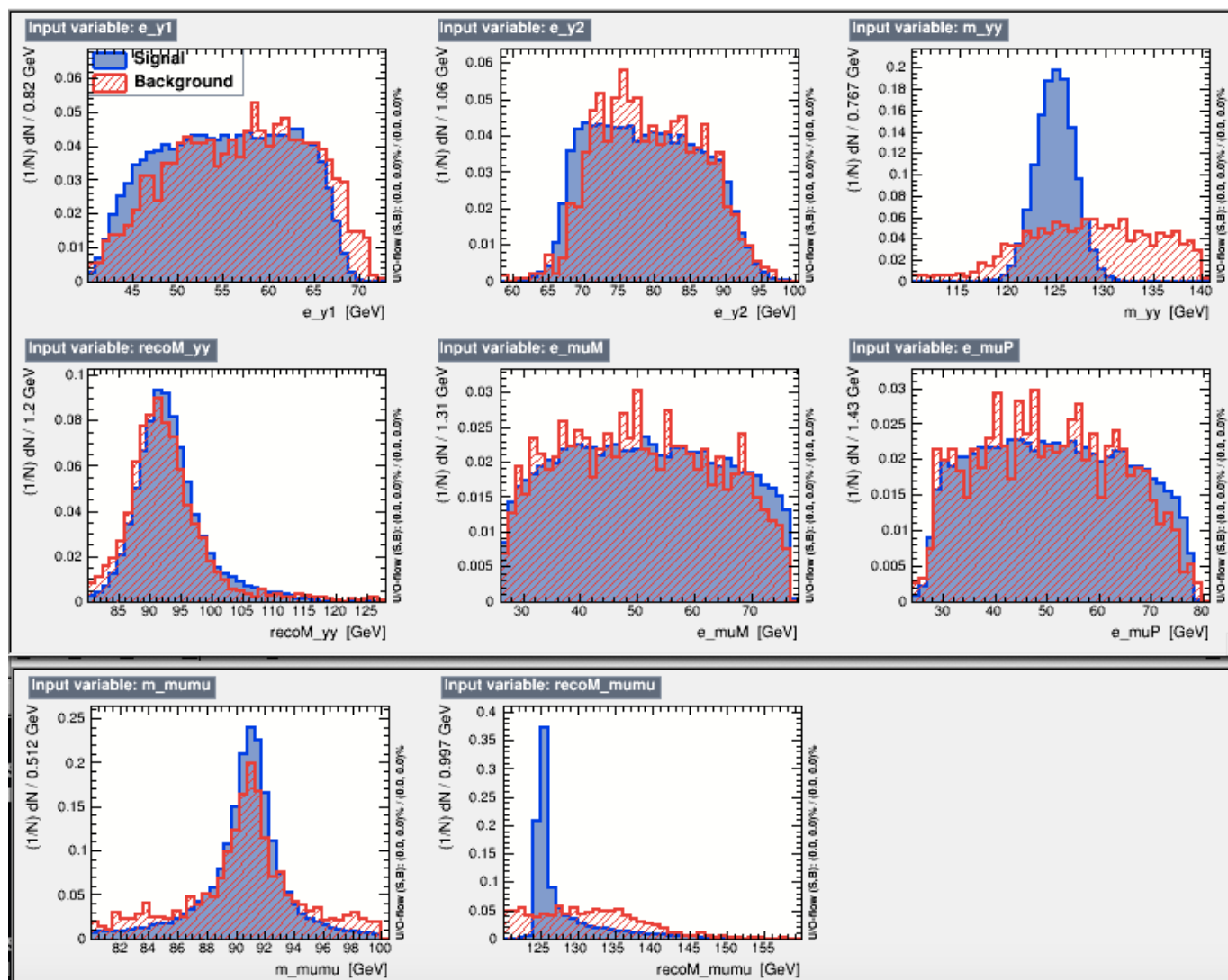
	$\mu\mu\gamma\gamma$	2f_e2e2
Generated	100000	26930165
	138039	1393678
$E_{\gamma} > 40\text{GeV}$	98710	92183
$E_{\gamma} > 40\text{GeV}$	98710	92183
$25\text{GeV} < pT_{\gamma} < 90\text{GeV}$	87464	52435
$10\text{GeV} < pT_{\gamma} < 90\text{GeV}$	84765	42757
$110\text{GeV} < M_{\gamma\gamma} < 140\text{GeV}$	83945	14384
$80\text{GeV} < \text{Reco}M_{\gamma\gamma} < 170\text{GeV}$	82032	5963
$26\text{GeV} < E_{\mu}M < 77\text{GeV}$	79317	5276
$24\text{GeV} < E_{\mu}M < 80\text{GeV}$	78277	4964
$80\text{GeV} < M_{\mu\mu} < 100\text{GeV}$	73576	3481
$120\text{GeV} < \text{Reco}M_{\mu\mu} < 170\text{GeV}$	73575	2681
Efficiency	0.73575	9.95538E-05
$\int L$	5 ab-1	5 ab-1
X-sections (fb)	6.77	5532.71
scaled to 5 ab-1	57.28181625	2754.011257

$S/\sqrt{S+B}$ is 1.075

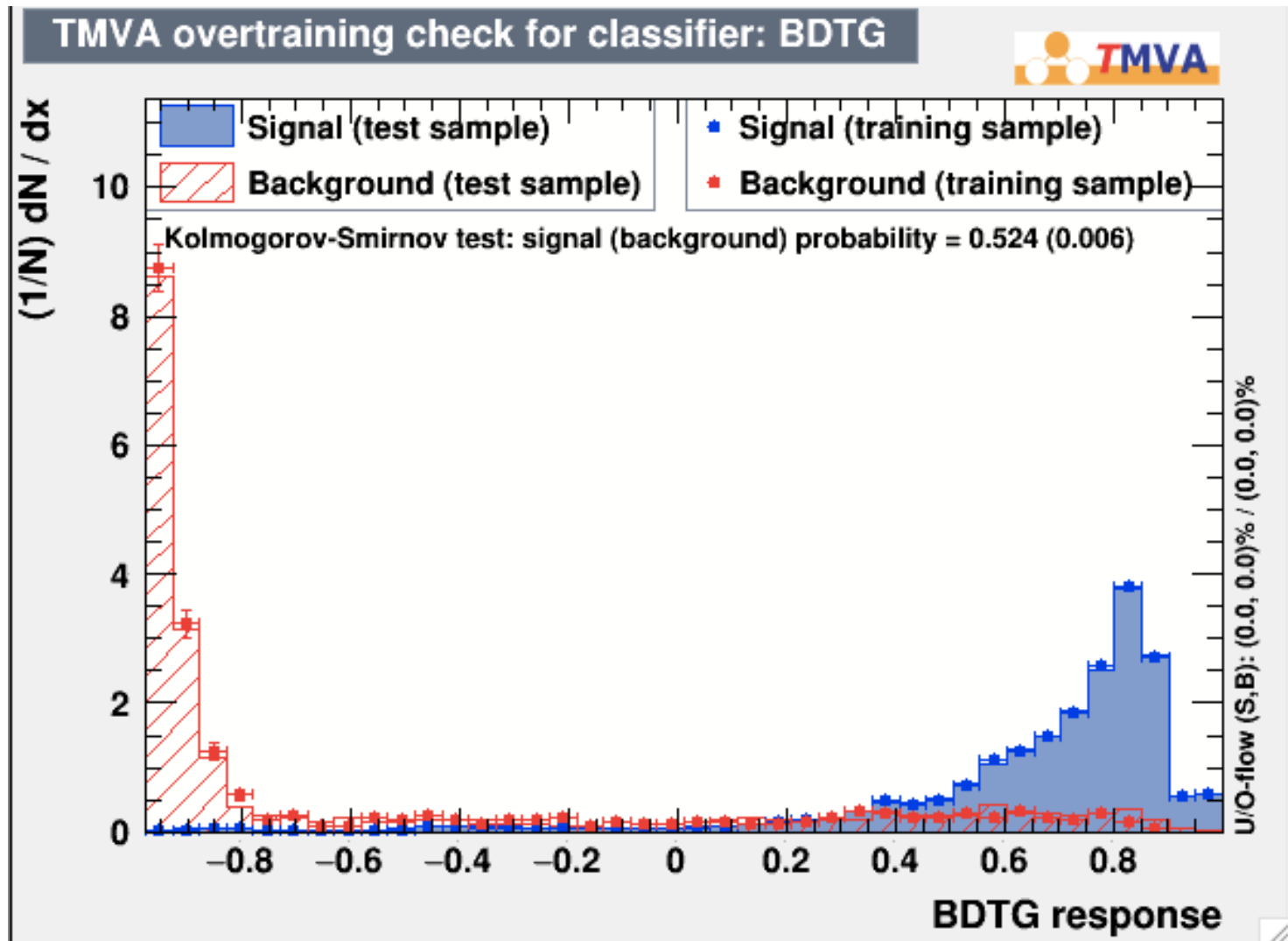
Multi-variable Analysis

-----BDTG

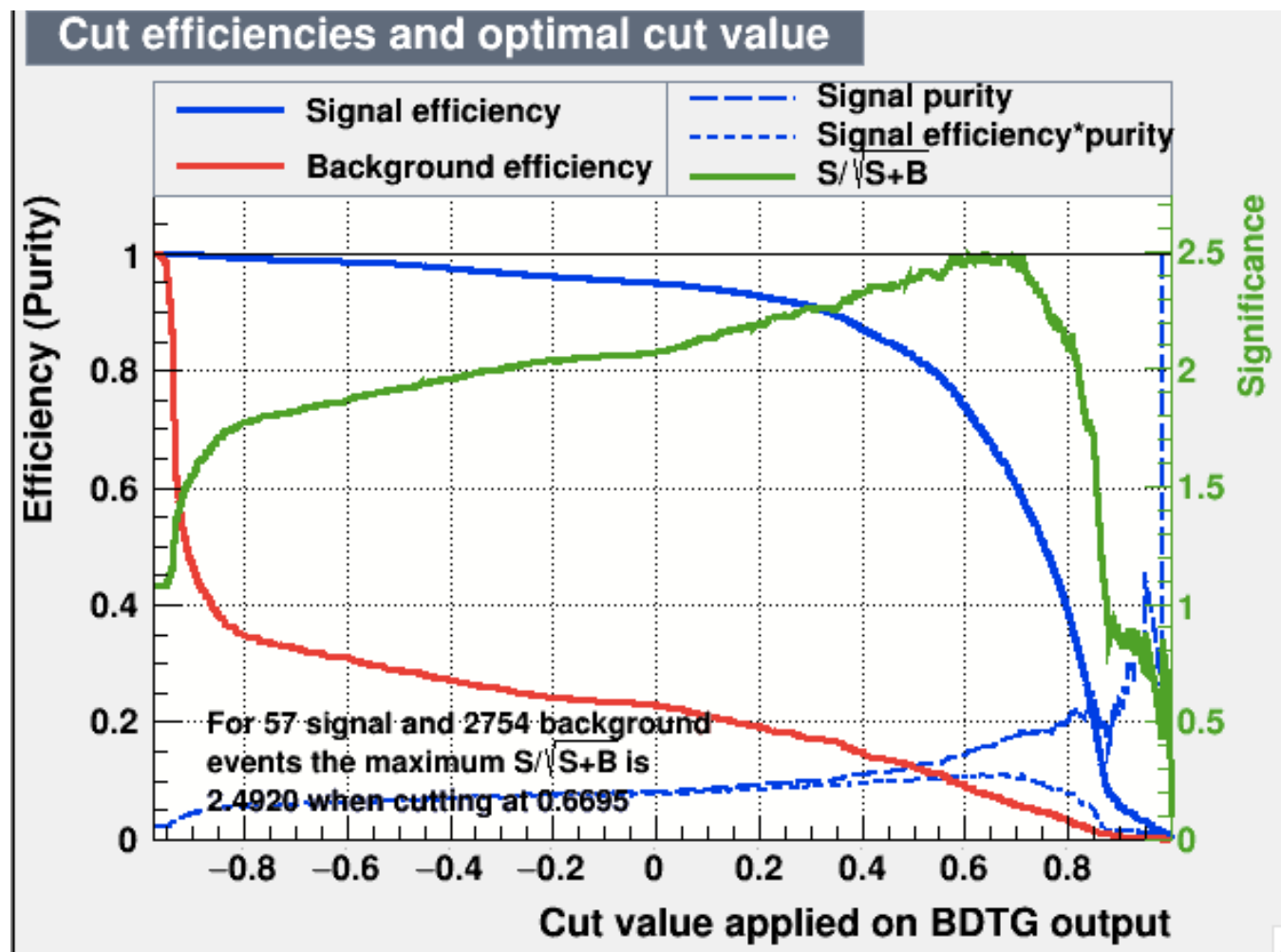
Input variable



BDTG Response



$S/\sqrt{S+B}$ is 2.4920



Improved 131.8%

This Week's Plan

- Fit Background and Signal
- Study it!!!!!!