

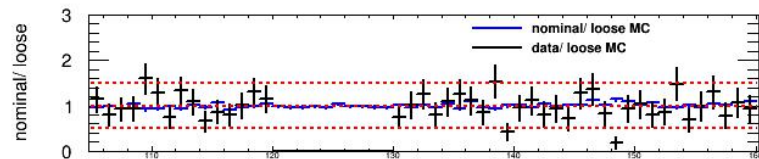
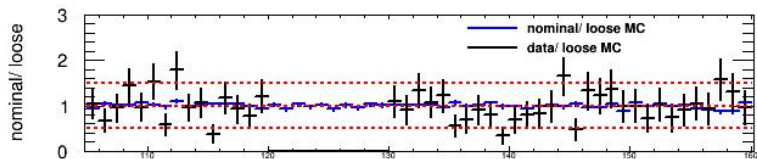
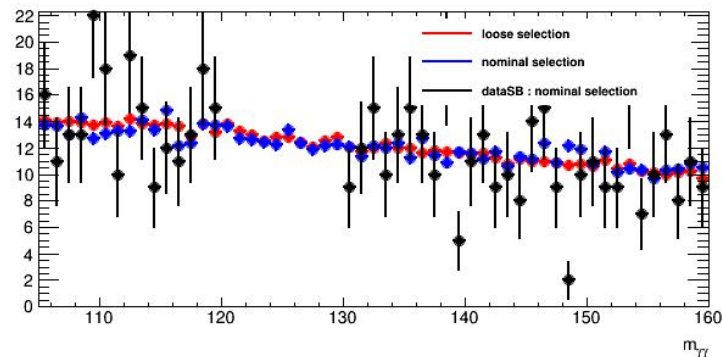
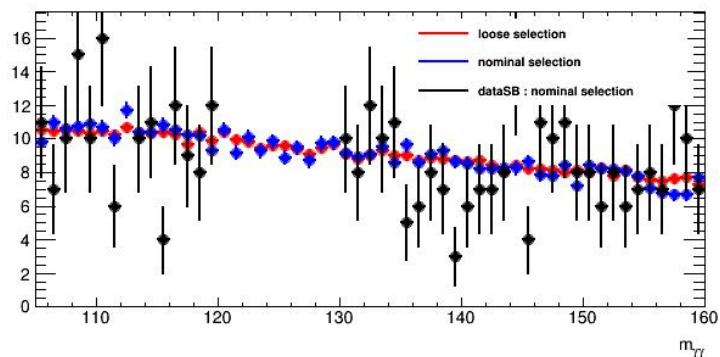
Spurious Signal

Strategy

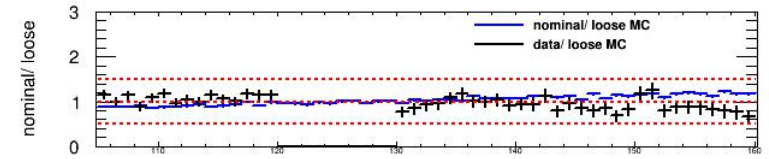
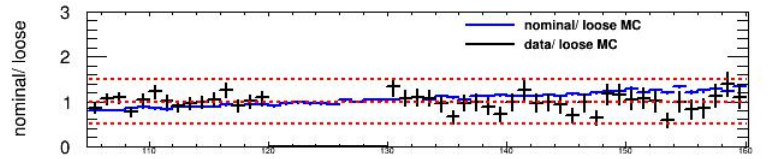
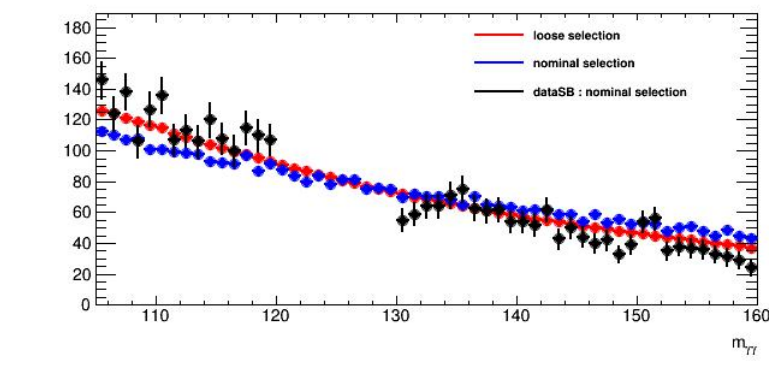
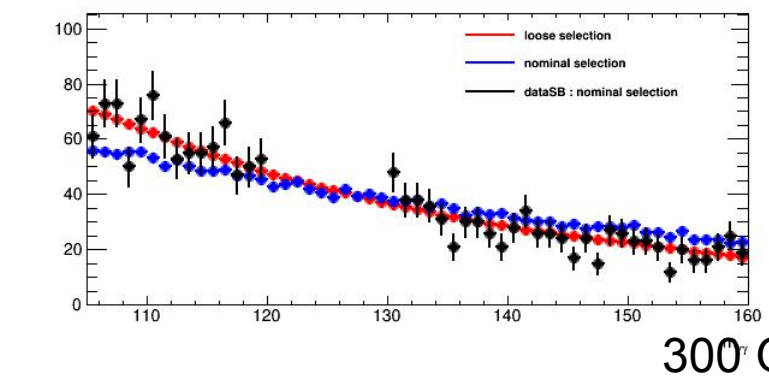
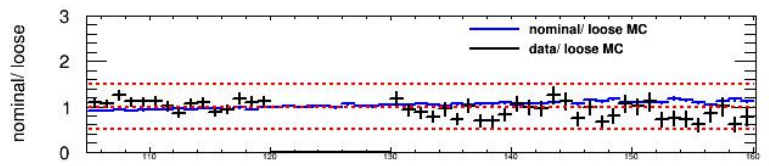
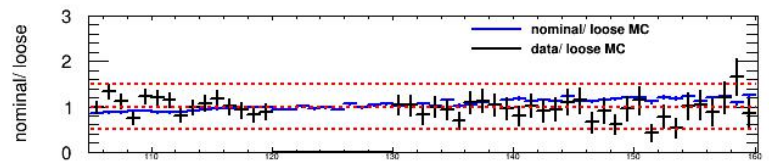
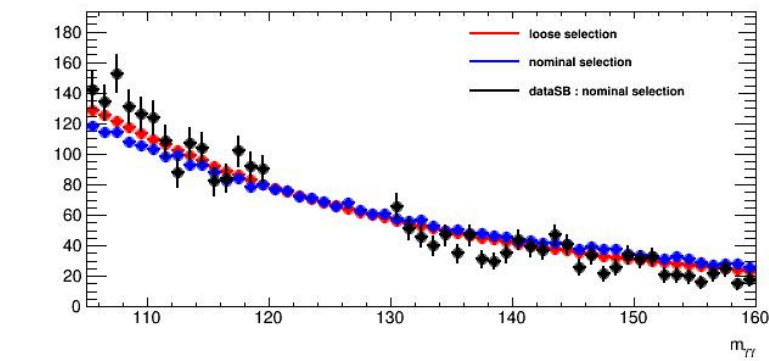
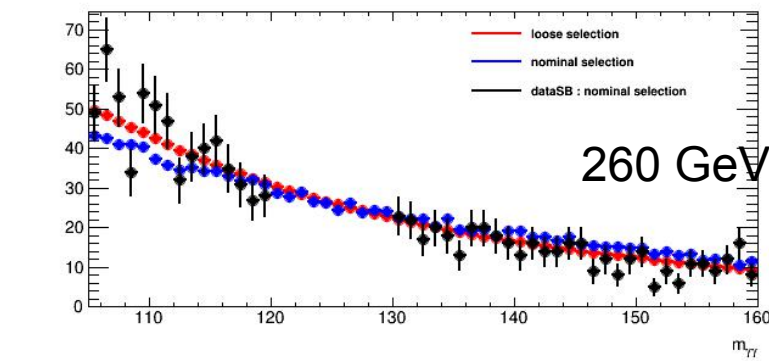
- Change the fit strategy from `SumW2Error(kTRUE)` to `SumW2Error(kFALSE)`, which is used in official package.
 - this affects ΔS very much
- Loose the selection
 - only keep diphoton + lep veto + bveto + pTyy cut

Shape comparison

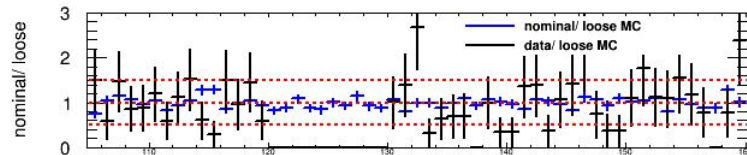
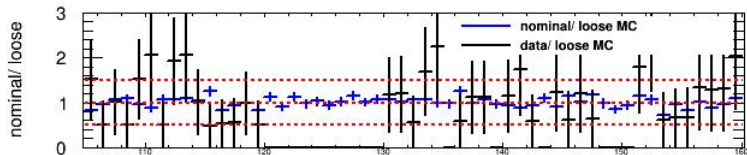
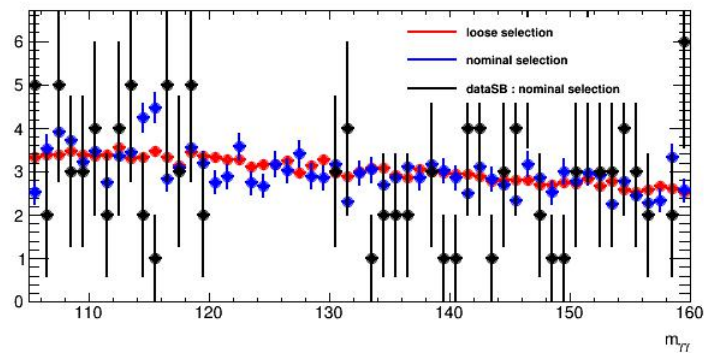
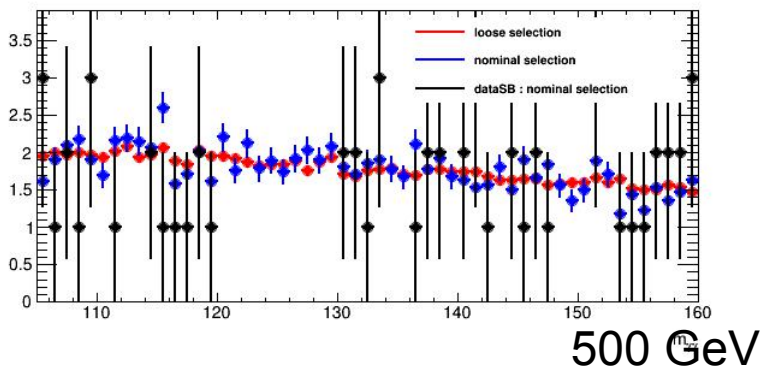
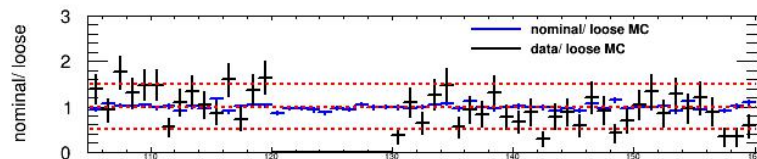
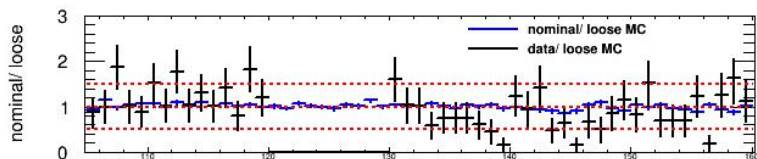
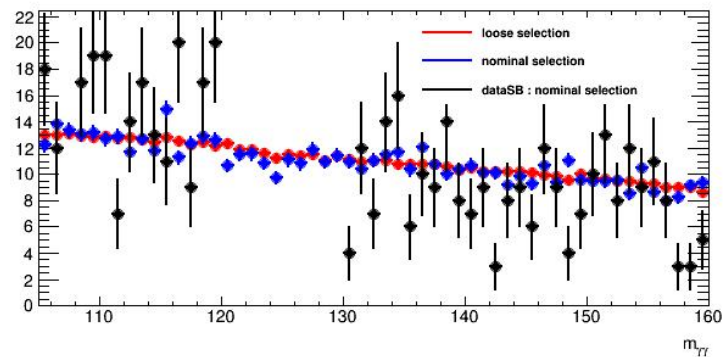
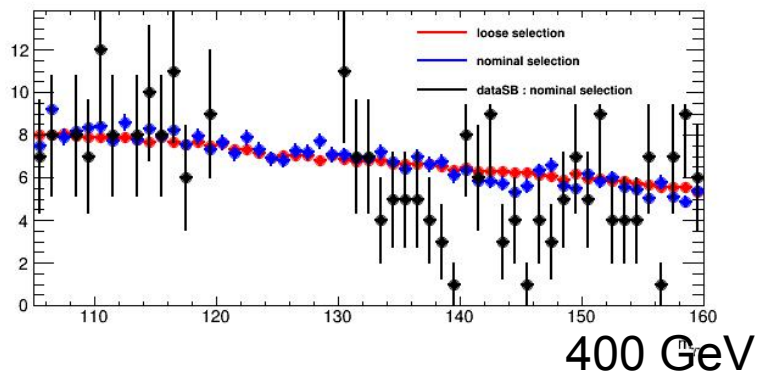
non-resonant 3jet and 4jet



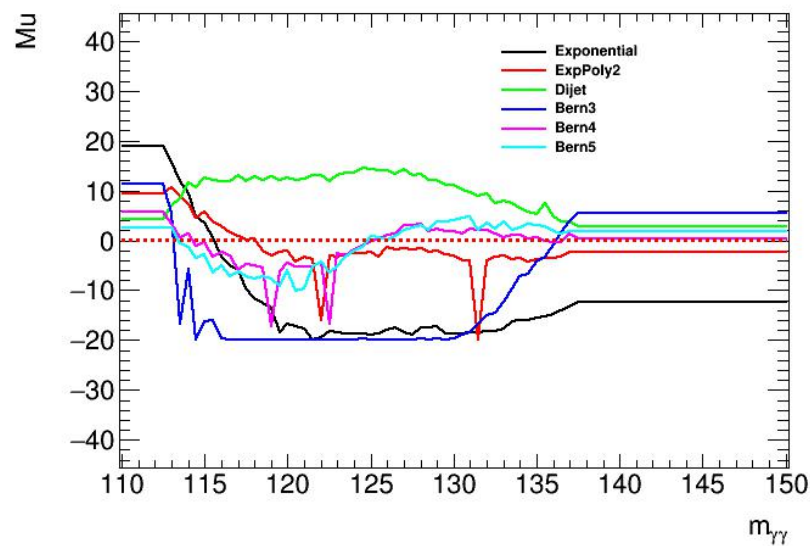
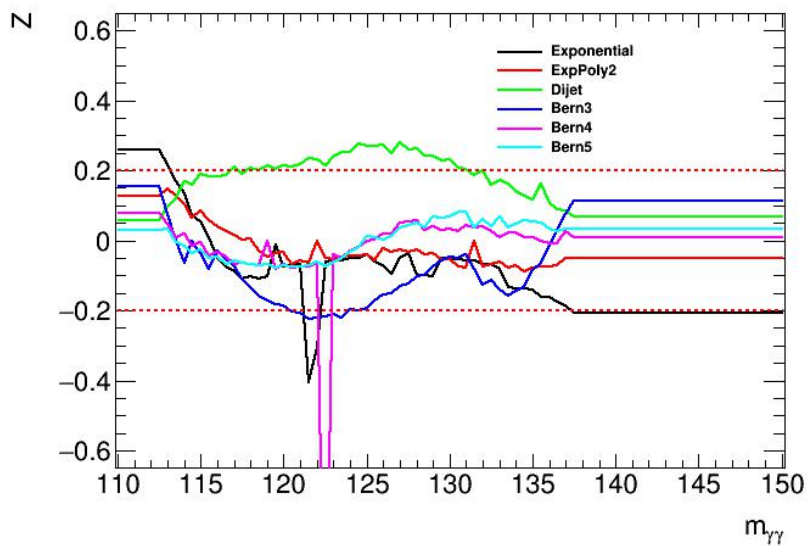
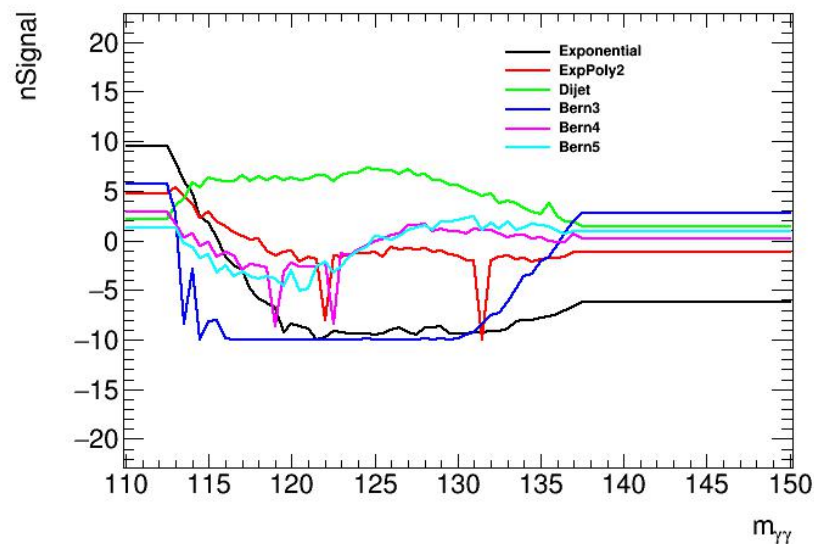
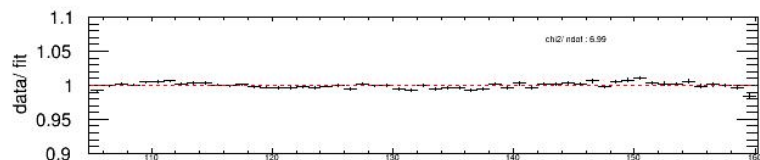
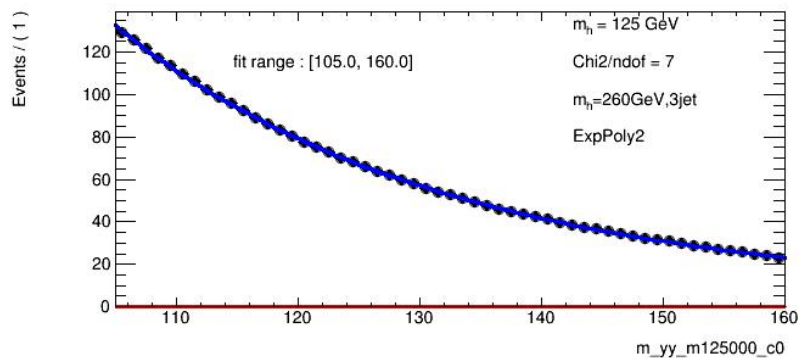
Shape comparison



Shape comparison



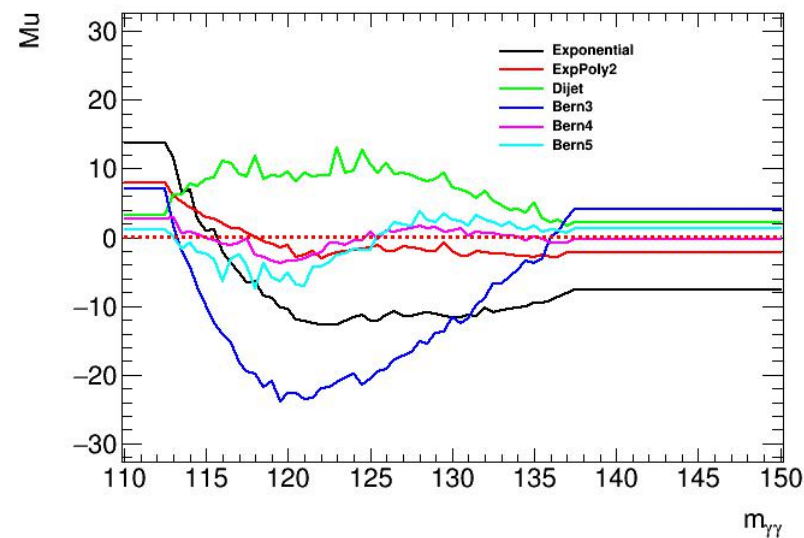
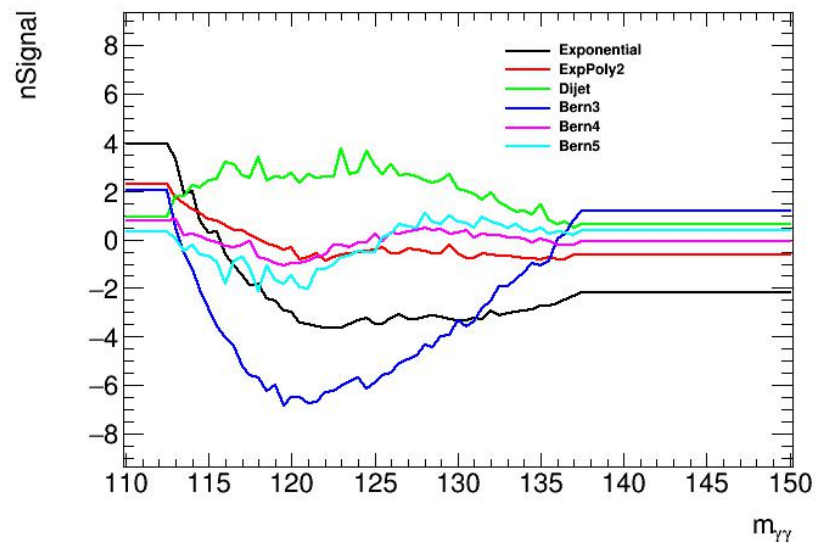
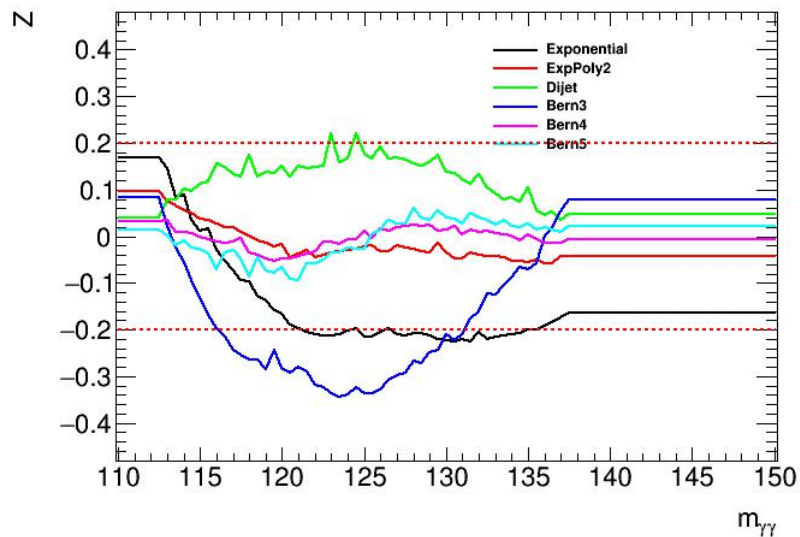
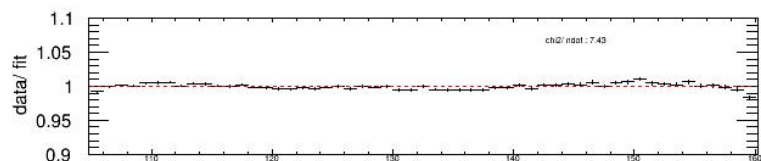
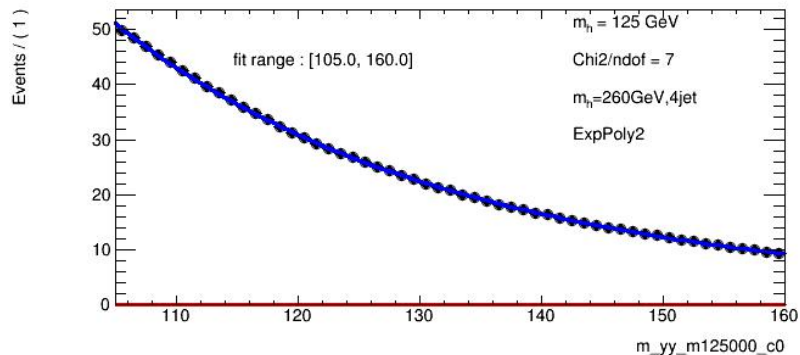
260 3jet



260 3jet

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	-9.99978	-0.404219	-19.893	fail
• ExpPoly2	-8.06938	-0.0687042	-16.0528	pass
• Dijet	7.33568	0.281562	14.5932	fail
• Bern3	-9.99999	-0.224063	-19.8934	fail
• Bern4	-8.4347	-1.19624	-16.7795	fail
• Bern5	-5.06061	-0.0743164	-10.0673	pass

260 4jet

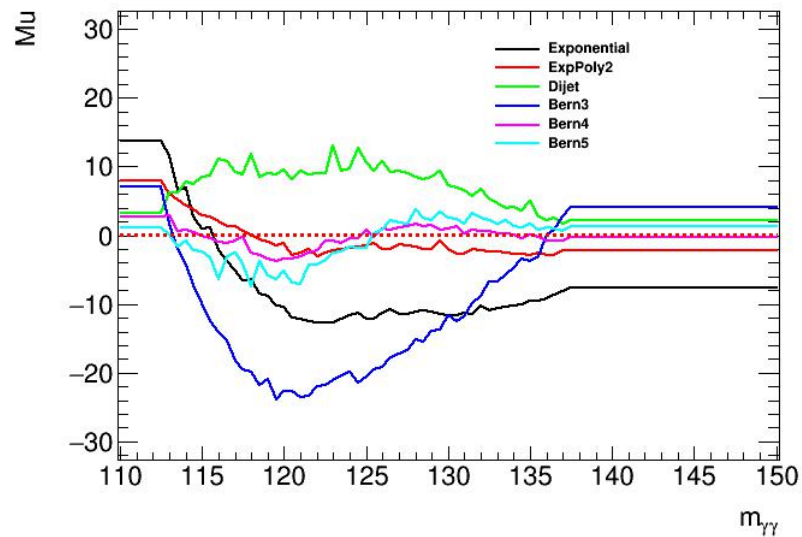
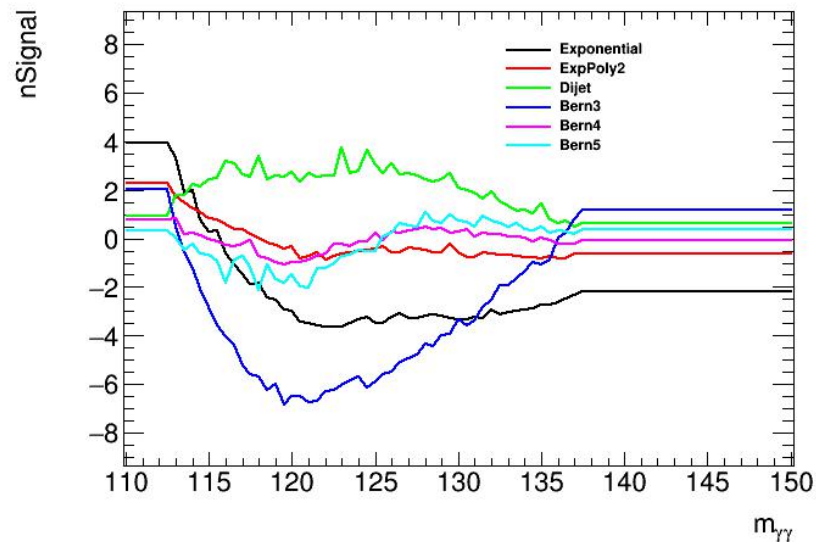
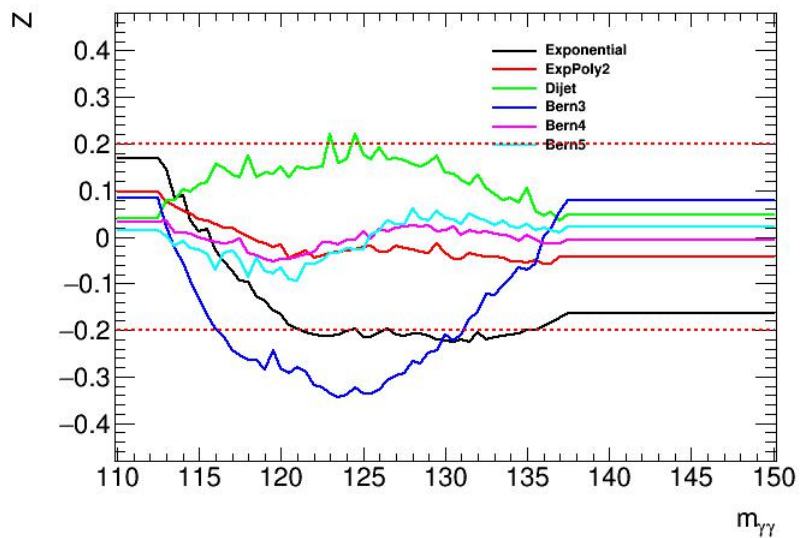
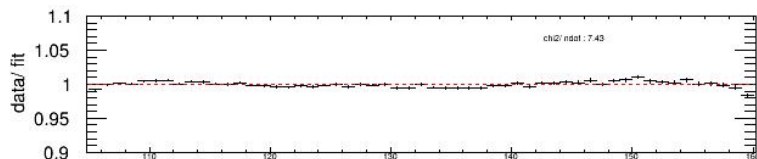
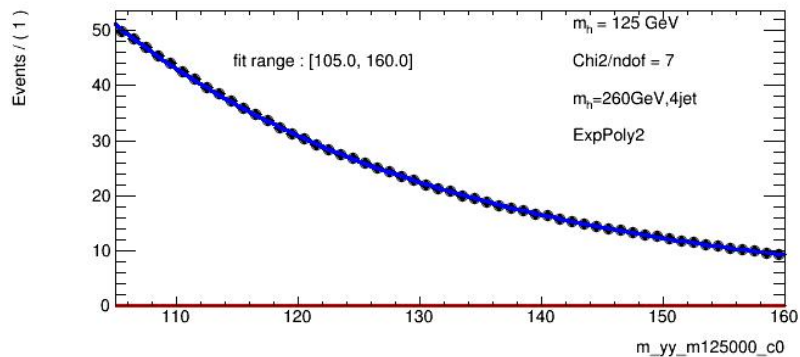


260 4jet

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	-3.64045	-0.222945	-12.7217	fail
• ExpPoly2	-0.86985	-0.045993	-3.03973	pass
• Dijet	3.7532	0.221662	13.1158	fail
• Bern3	-6.72292	-0.345207	-23.4936	fail
• Bern4	-0.972048	-0.0476326	-3.39687	pass
• Bern5	-2.04618	-0.0935934	-7.15046	pass

300 3jet

10



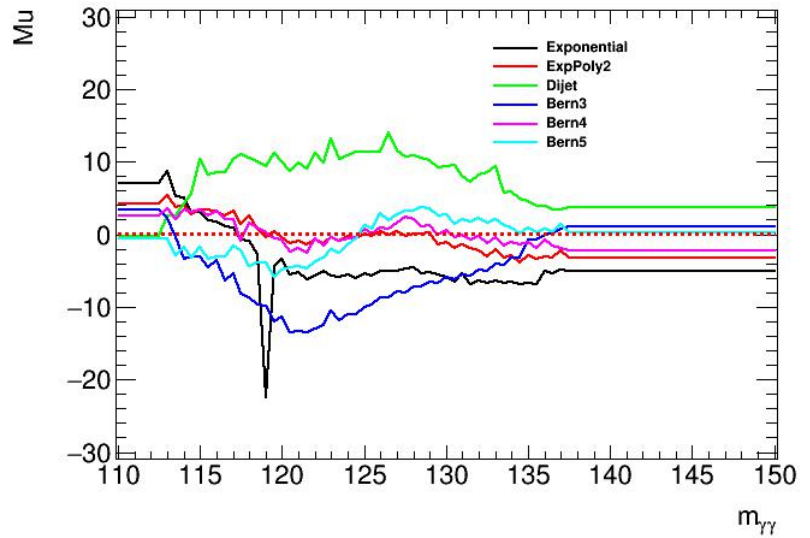
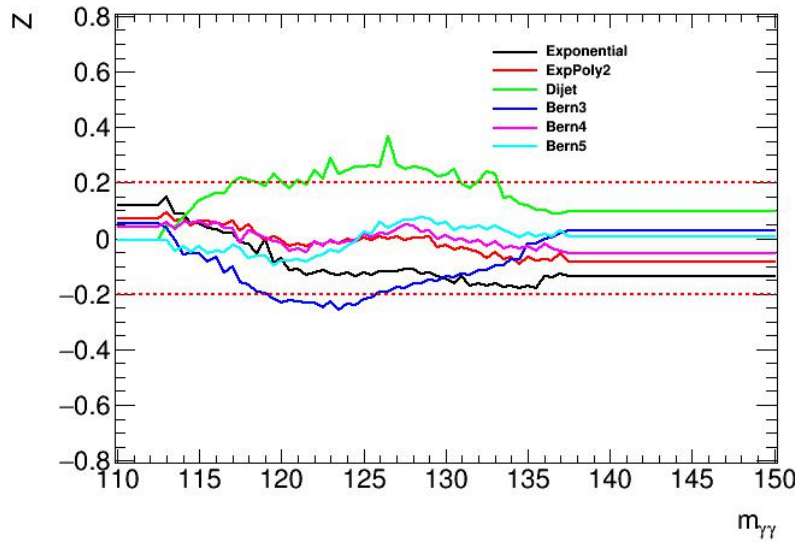
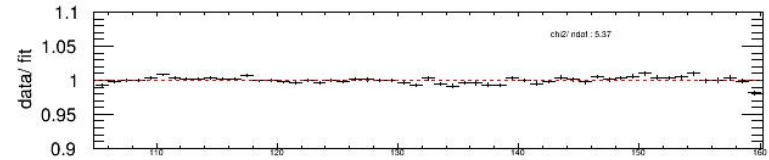
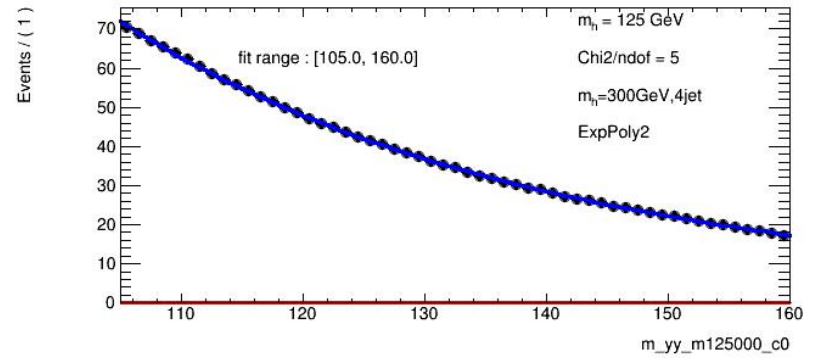
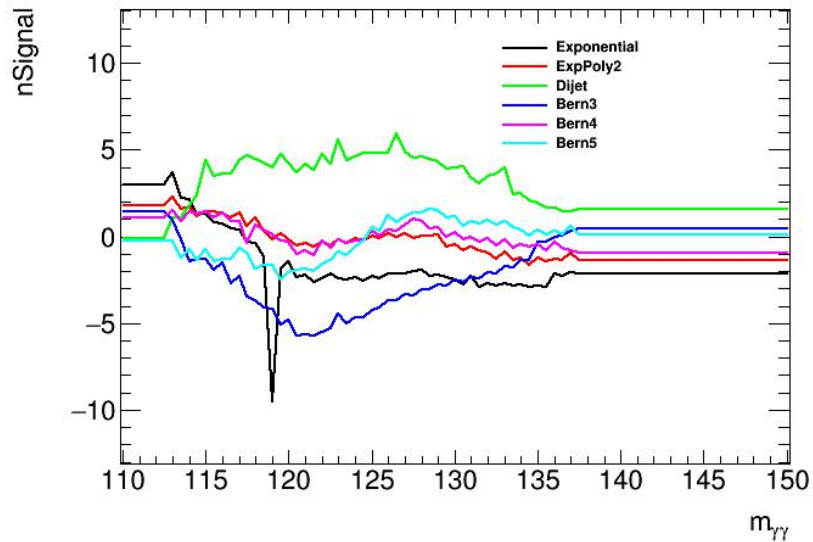
300 3jet

11

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	2.11108	0.0737354	3.68534	pass
• ExpPoly2	-2.05862	-0.0741935	-3.59376	pass
• Dijet	13.8543	0.525359	24.1856	fail
• Bern3	-4.99893	-0.139393	-8.72672	pass
• Bern4	1.84193	0.057016	3.21548	pass
• Bern5	-3.66739	-0.0800772	-6.40223	pass

300 4jet

12



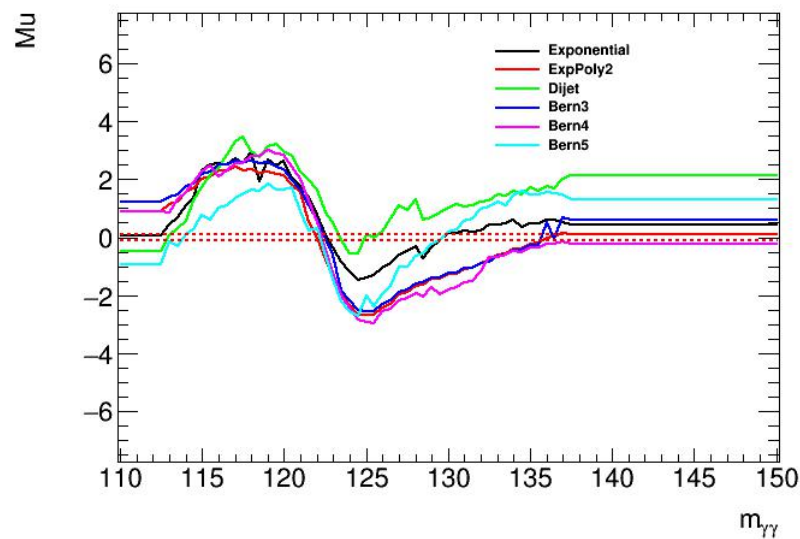
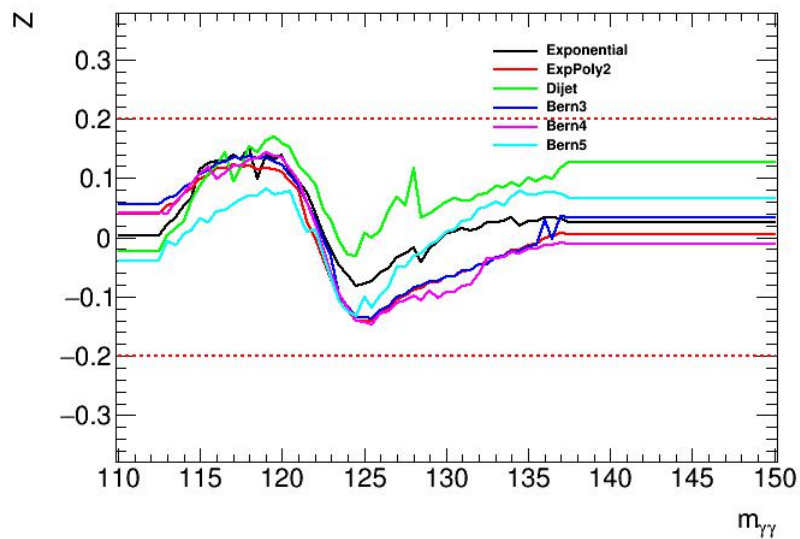
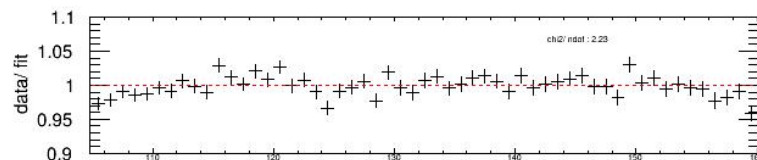
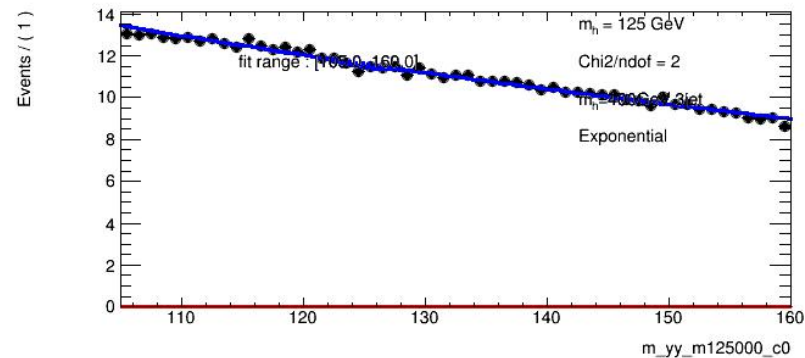
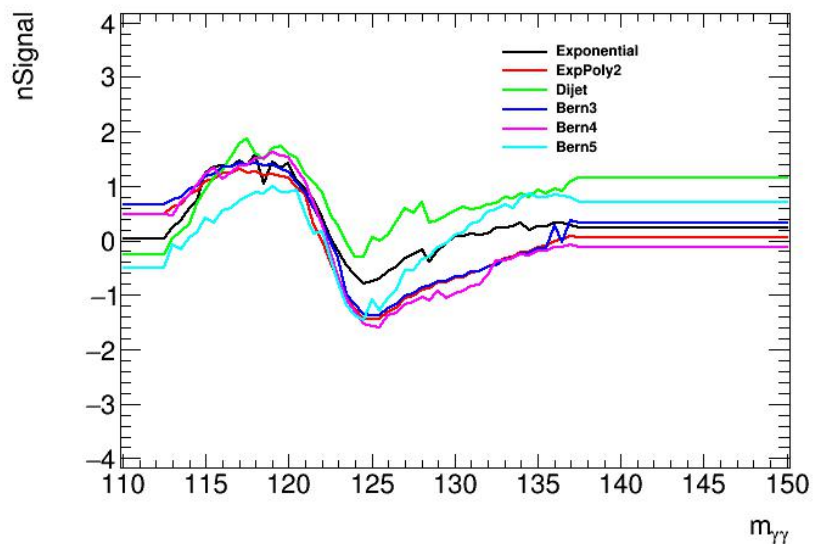
300 4jet

13

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	-2.61726	-0.145286	-6.17727	pass
• ExpPoly2	-0.594756	-0.0307614	-1.40375	pass
• Dijet	5.93923	0.3667	14.0178	fail
• Bern3	-5.74743	-0.256397	-13.5651	fail
• Bern4	-1.0938	0.0499994	-2.5816	pass
• Bern5	-2.04352	-0.0852669	-4.82314	pass

400 3jet

14



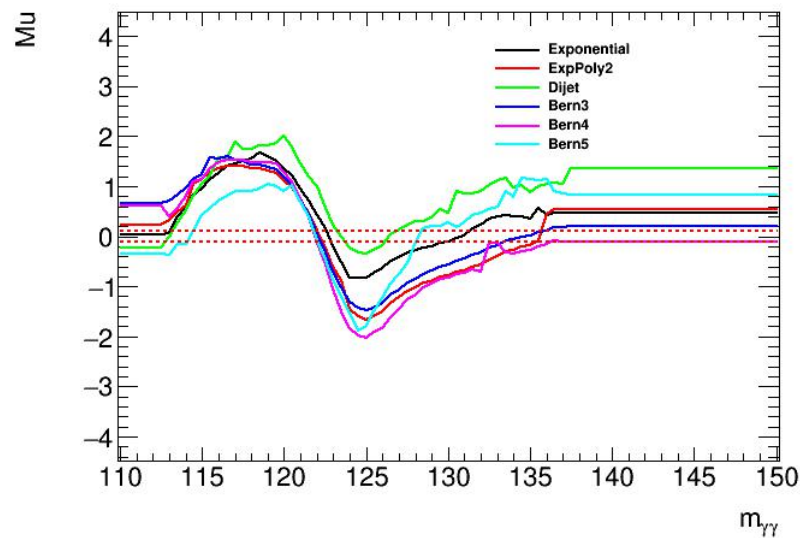
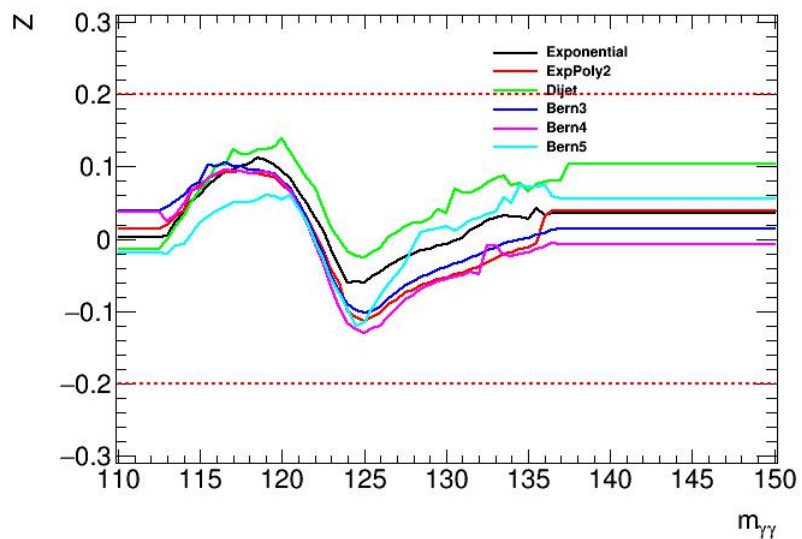
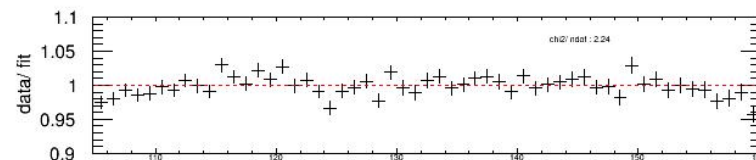
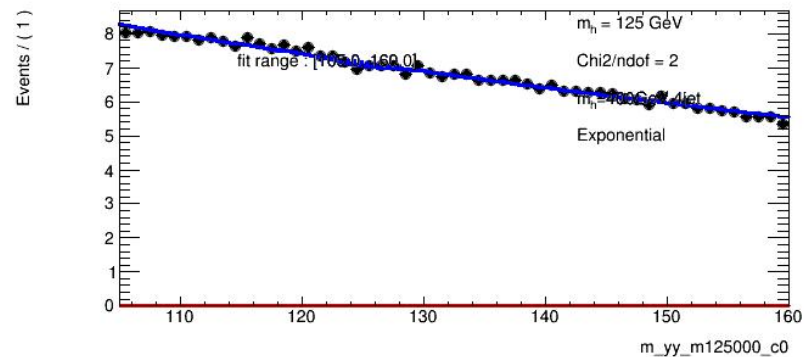
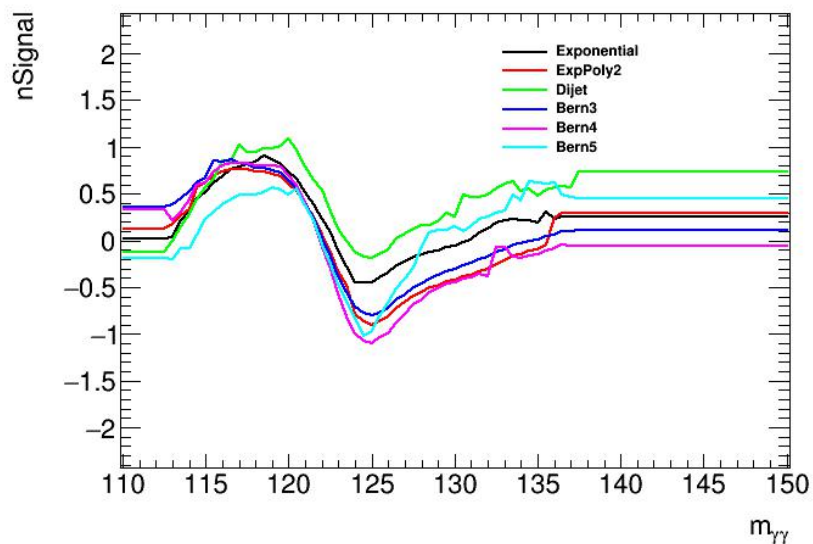
400 3jet

15

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	1.42041	0.139534	2.63494	pass
• ExpPoly2	-1.4494	-0.141683	-2.68871	pass
• Dijet	1.61038	0.15839	2.98734	pass
• Bern3	-1.37853	-0.136856	-2.55724	pass
• Bern4	-1.59637	-0.147531	-2.96134	pass
• Bern5	-1.46391	-0.133307	-2.71563	pass

400 4jet

16

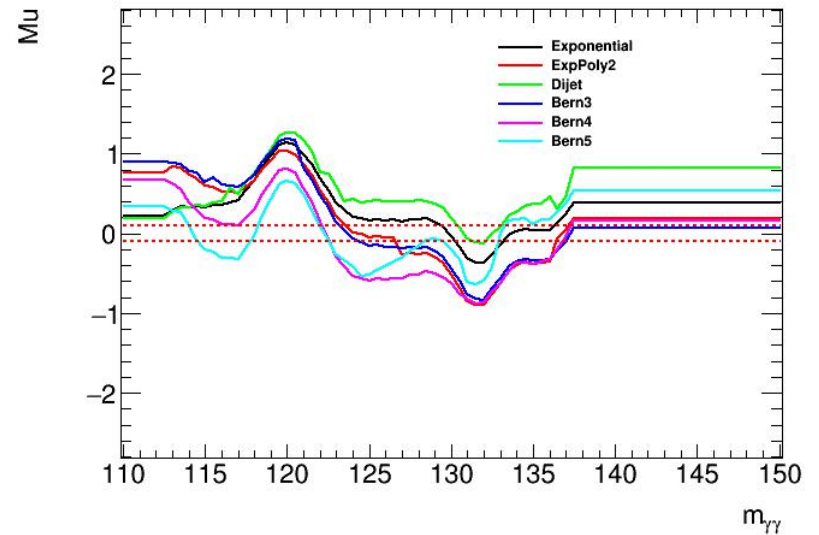
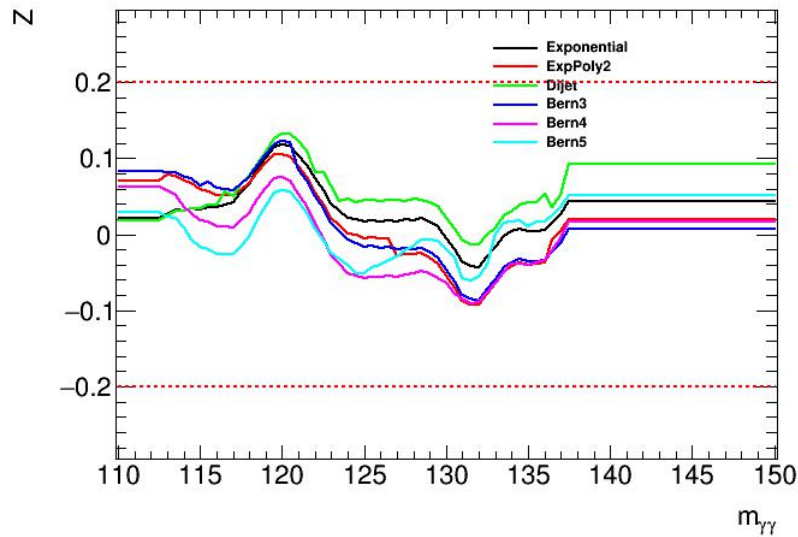
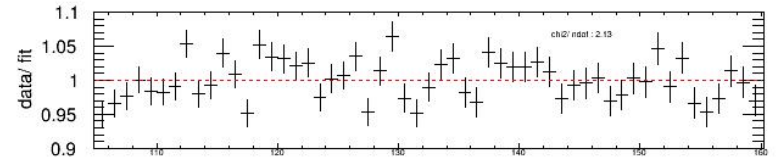
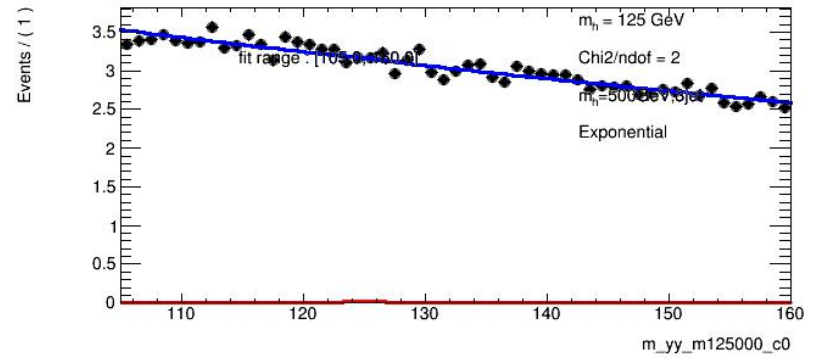
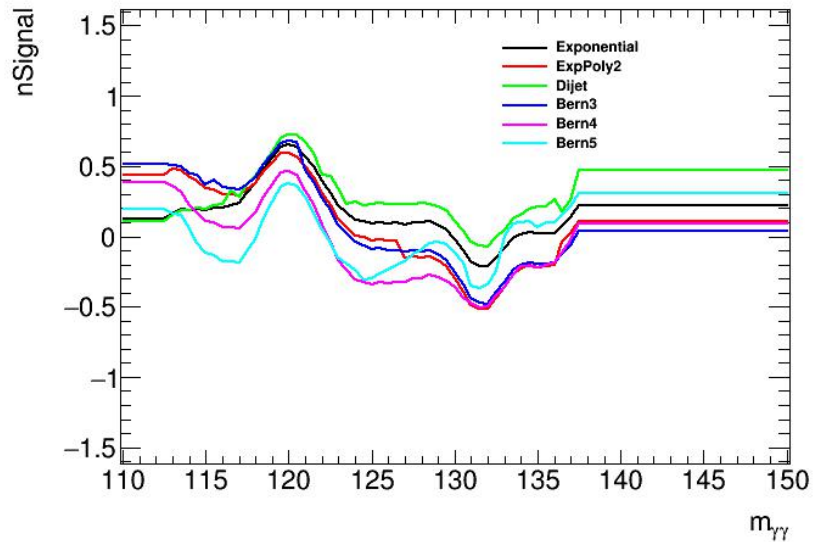


400 4jet

17

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	0.742123	0.0942974	1.36779	pass
• ExpPoly2	-0.902772	-0.114292	-1.66387	pass
• Dijet	1.08767	0.138744	2.00465	pass
• Bern3	-0.79639	-0.102439	-1.4678	pass
• Bern4	-1.09822	-0.130631	-2.02409	pass
• Bern5	-1.02615	-0.120855	-1.89126	pass

500 3jet

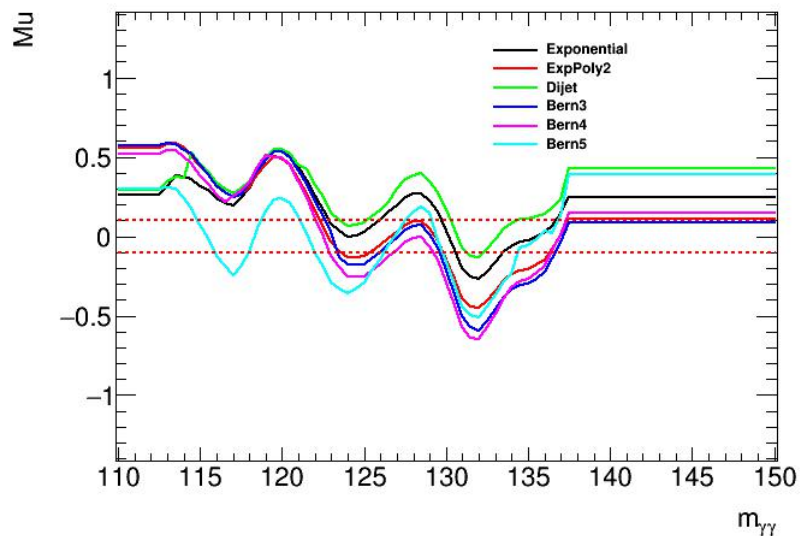
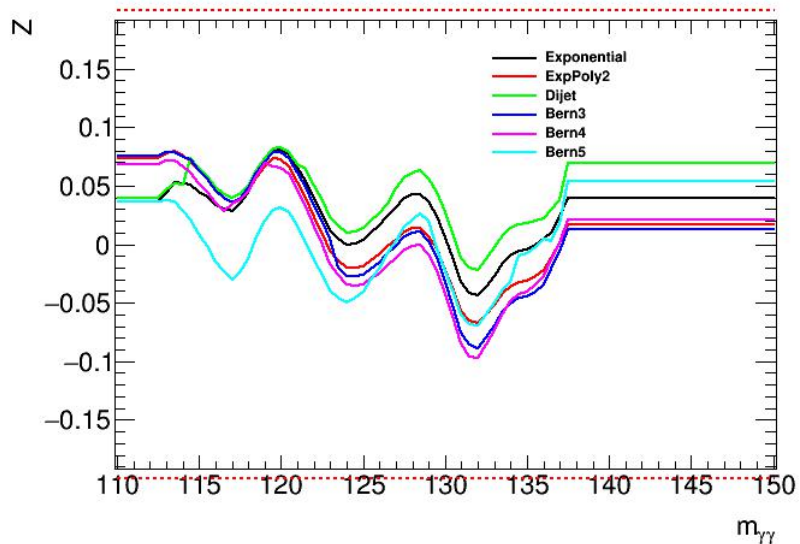
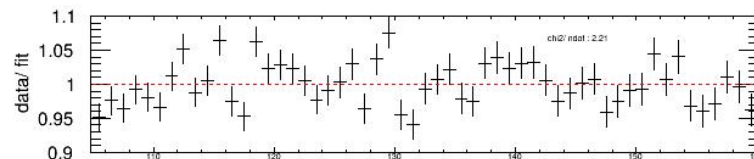
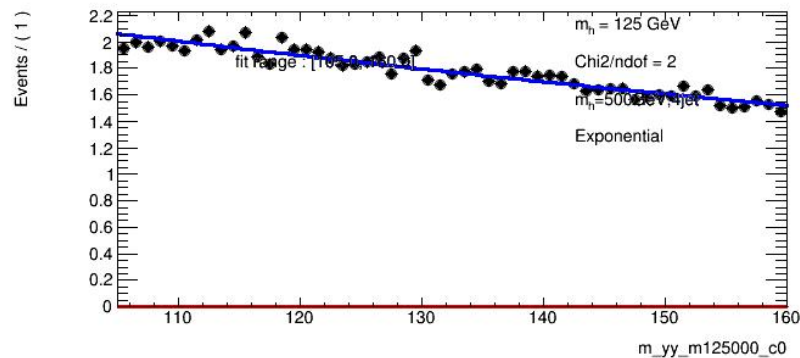
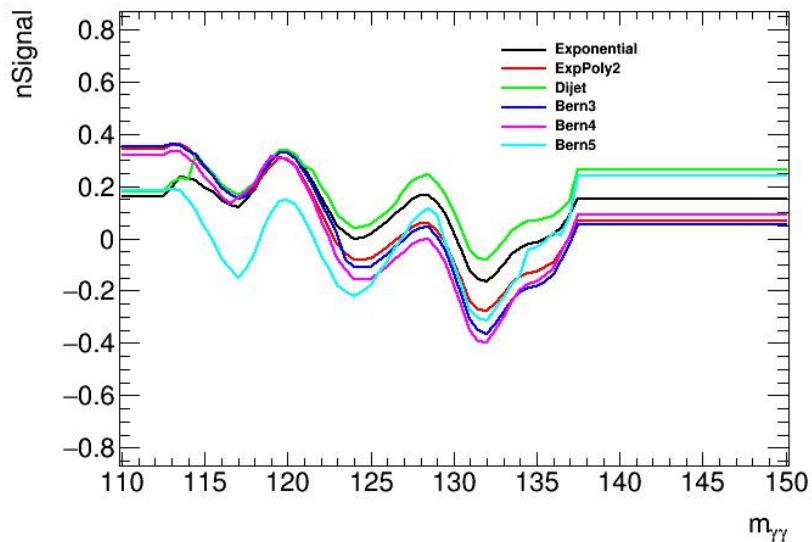


500 3jet

19

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	0.655179	0.118666	1.14136	pass
• ExpPoly2	0.594007	0.105861	1.03479	pass
• Dijet	0.727791	0.13275	1.26785	pass
• Bern3	0.680322	0.122009	1.18516	pass
• Bern4	-0.502476	-0.0904105	-0.875339	pass
• Bern5	0.37772	-0.0601365	0.658009	pass

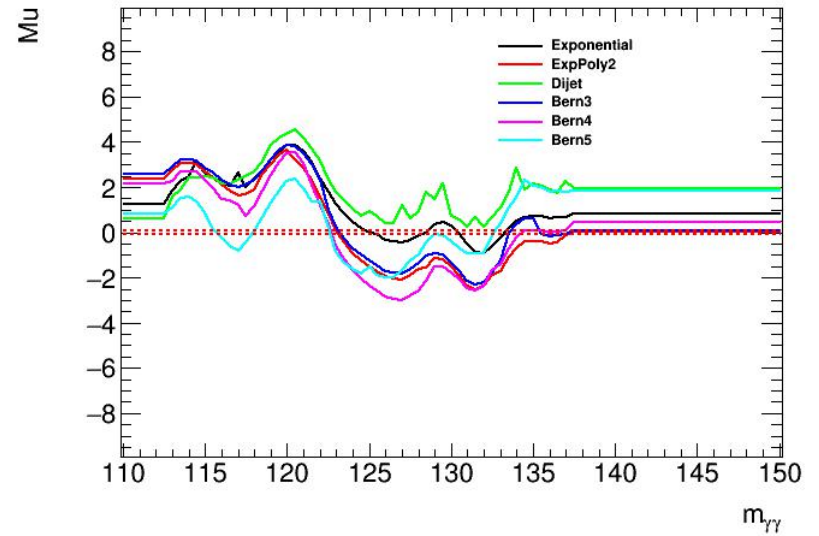
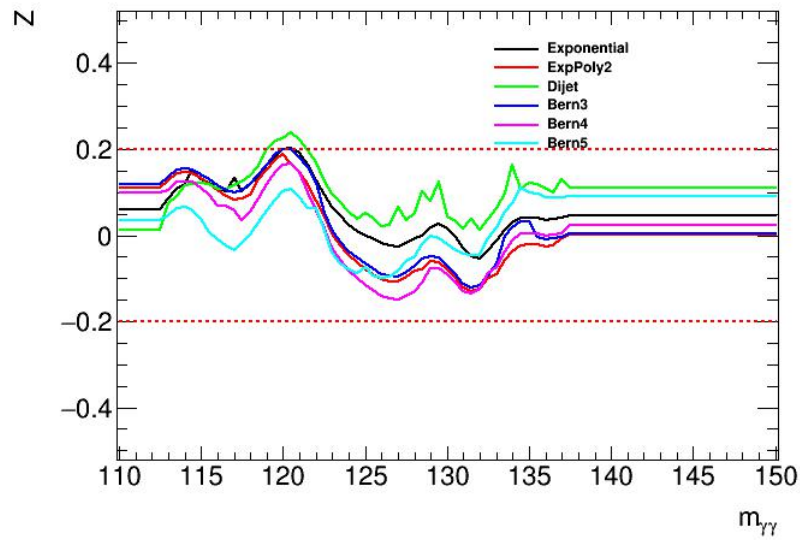
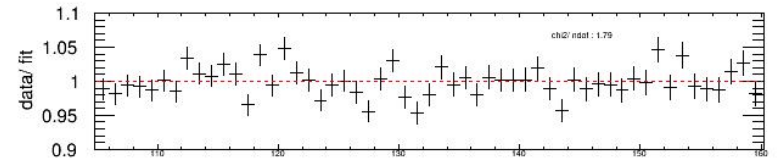
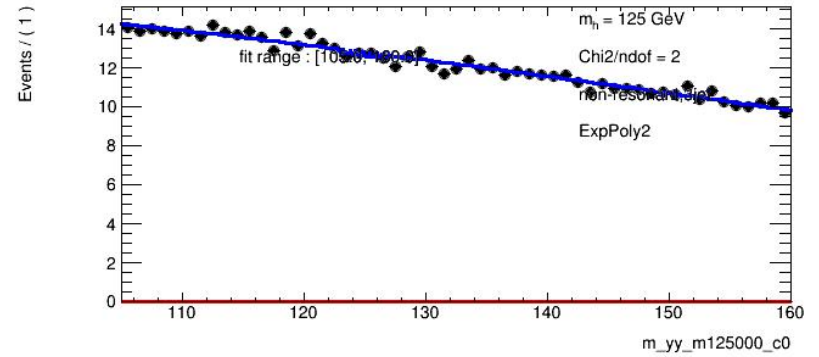
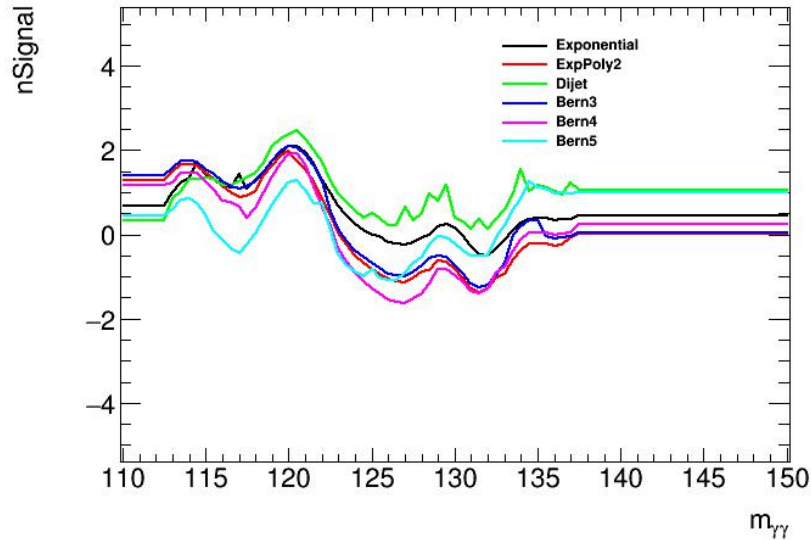
500 4jet



500 4jet

21

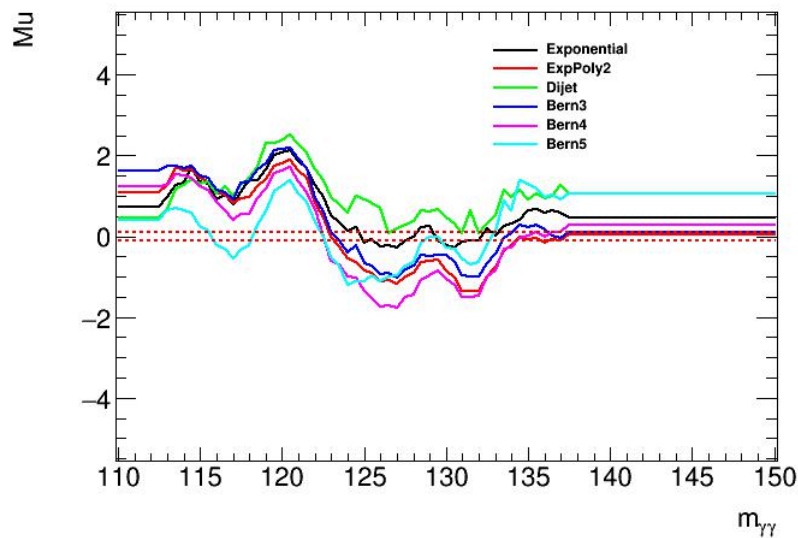
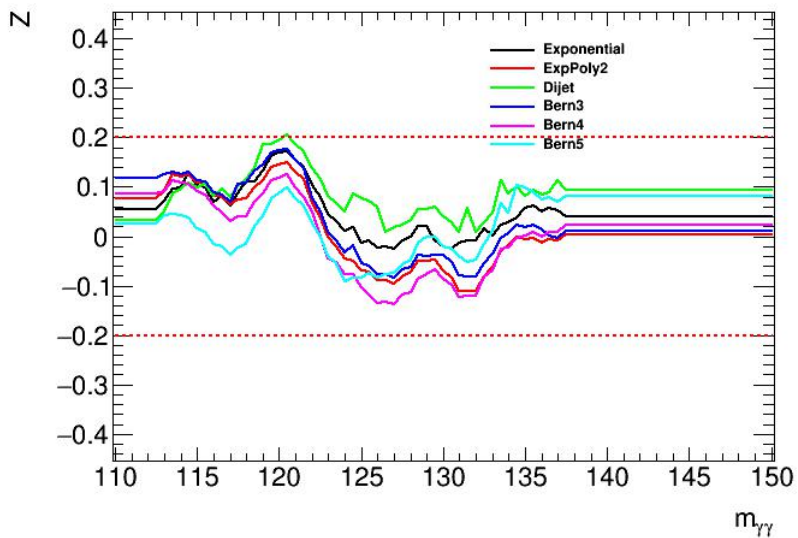
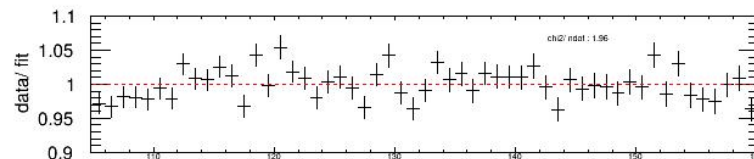
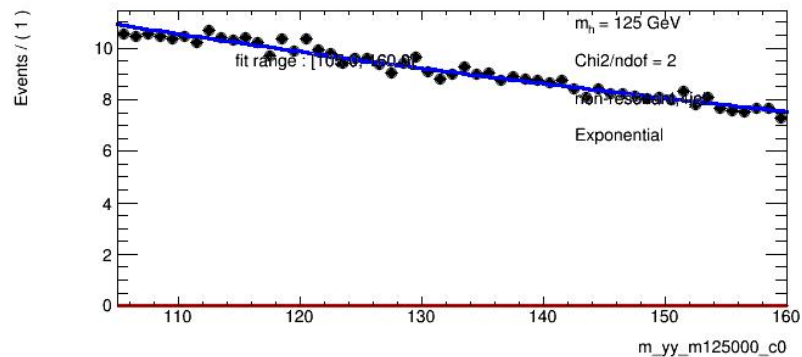
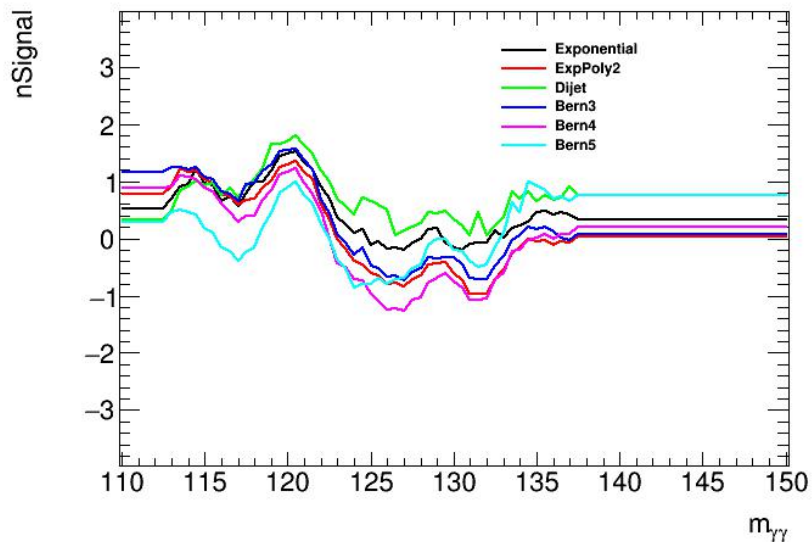
• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	0.33347	0.081142	0.542753	pass
• ExpPoly2	0.307945	0.0736001	0.501209	pass
• Dijet	0.337584	0.0826105	0.549449	pass
• Bern3	-0.36394	-0.0889202	-0.592345	pass
• Bern4	-0.398298	-0.0971628	-0.648266	pass
• Bern5	-0.313721	-0.0694864	-0.510611	pass



non-res 3jet

23

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	2.10361	0.202711	3.87163	fail
• ExpPoly2	1.99189	0.187715	3.66602	pass
• Dijet	2.46198	0.238063	4.53121	fail
• Bern3	2.08688	0.198736	3.84085	pass
• Bern4	1.91384	0.165621	3.52236	pass
• Bern5	1.28034	0.10766	2.35642	pass



non-res 4jet

25

• Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• Exponential	1.51328	0.172778	2.11702	pass
• ExpPoly2	1.3484	0.150865	1.88636	pass
• Dijet	1.81003	0.207135	2.53216	fail
• Bern3	1.56795	0.177108	2.1935	pass
• Bern4	-1.25775	-0.137289	-1.75954	pass
• Bern5	0.987877	0.0985547	1.382	pass

summary

• Category	Function	Max(S)	Max(S/DeltaS)	Max(S/RefS)	Result
• 260 3jet	ExpPoly2	-8.06938	-0.0687042	-16.0528	pass
• 260 4jet	ExpPoly2	-0.86985	-0.045993	-3.03973	pass
• 300 3jet	Exponential	2.11108	0.0737354	3.68534	pass
• 300 4jet	Exponential	-2.61726	-0.145286	-6.17727	pass
• 400 3jet	Exponential	1.42041	0.139534	2.63494	pass
• 400 4jet	Exponential	0.742123	0.0942974	1.36779	pass
• 500 3jet	Exponential	0.655179	0.118666	1.14136	pass
• 500 4jet	Exponential	0.33347	0.081142	0.542753	pass
• non-res 3jet	ExpPoly2	1.99189	0.187715	3.66602	pass
• non-res 4jet	Exponential	1.51328	0.172778	2.11702	pass