

ZHH Analysis.

Toy model

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HELMHOLTZ



Fit model

$$\text{Template} = f_1 \cdot \text{hist}_{ZHH} + f_2 \cdot \text{hist}_{WBF} + \sqrt{f_1 * f_2} \cdot \text{hist}_{int} + \text{hist}_{bkg}$$
$$\text{data} = \text{hist}_{\nu\nu HH} + \text{hist}_{bkg}$$

Fit model: 2D LLH

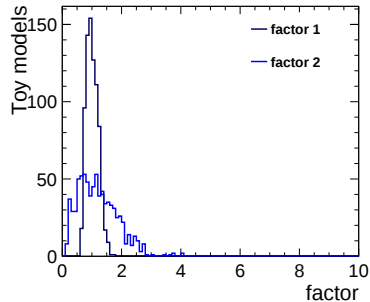
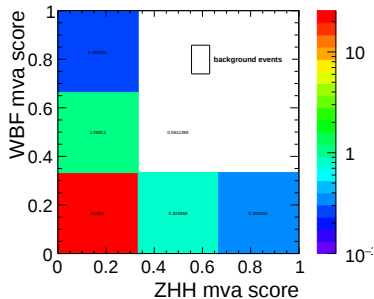
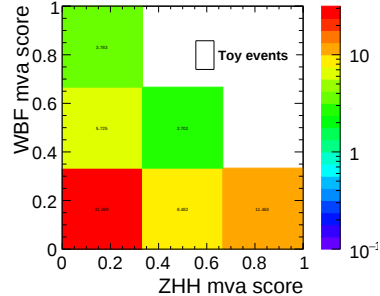
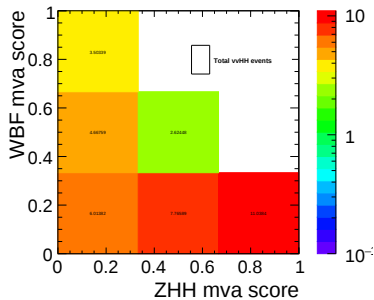
$$LLH = \sum_i \sum_j \text{Log}(\text{Poisson}(\text{data}_{i,j}, \text{temp}_{i,j}))$$

Toy model:

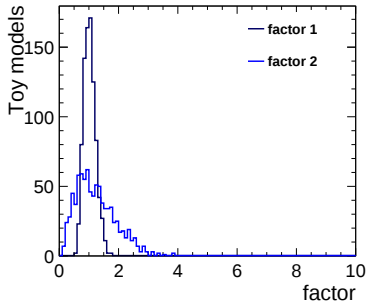
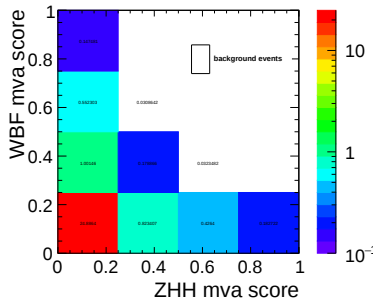
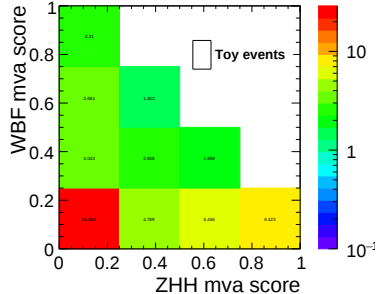
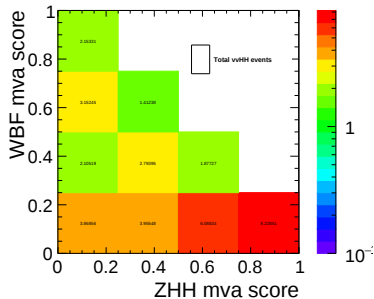
- 1000 models using TRandom1
- for each bin drawing a random Poisson-distributed value with expectation value from SM-data
- factors and errors from mean and RMS of histograms

	binning	factor1	factor2
Results:	3x3	1.01506 ± 0.197526	1.20047 ± 0.65342
	4x4	1.02805 ± 0.197284	1.24033 ± 0.657761
	5x5	1.06279 ± 0.218156	1.44197 ± 0.735455
	6x6	1.09639 ± 0.222596	1.75036 ± 0.77251
	7x7	1.16505 ± 0.234325	2.22476 ± 0.919875
	8x8	1.25597 ± 0.237808	2.6824 ± 0.995693
	9x9	1.36378 ± 0.255812	3.3084 ± 1.14197
	10x10	1.45841 ± 0.265373	3.99349 ± 1.32062

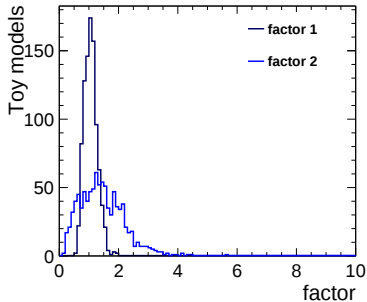
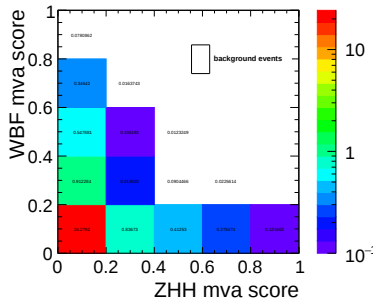
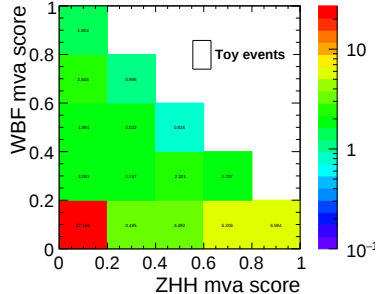
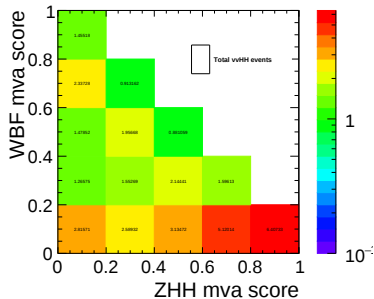
3x3 bins



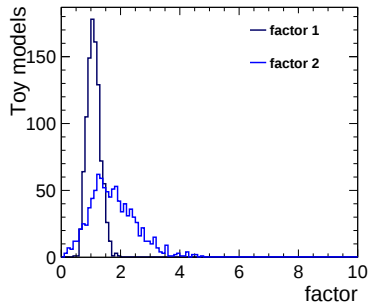
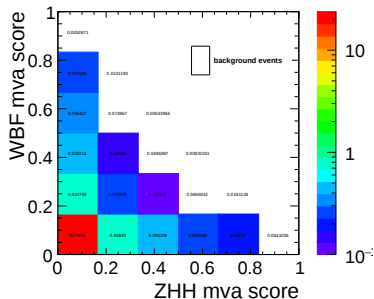
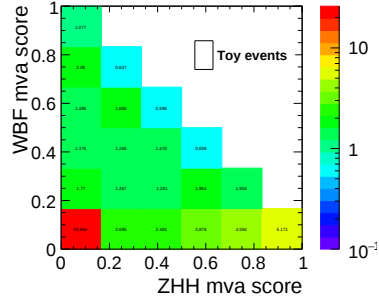
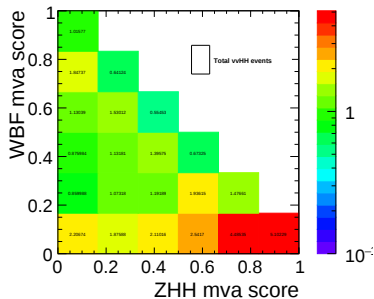
4x4 bins



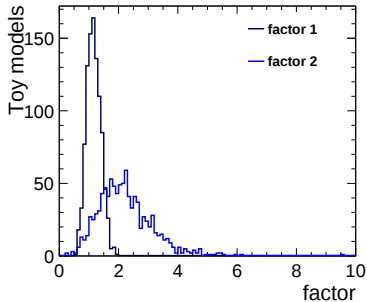
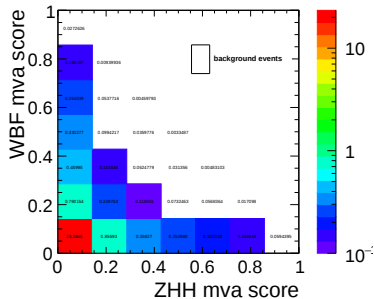
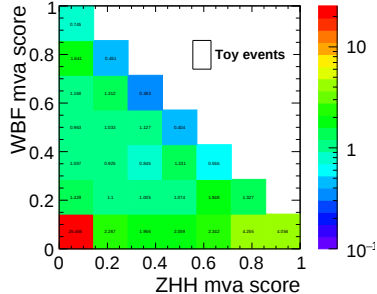
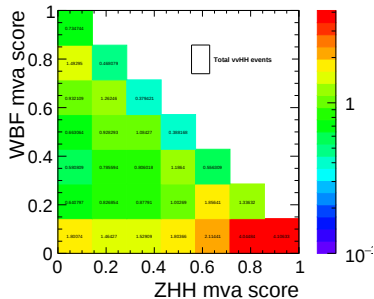
5x5 bins



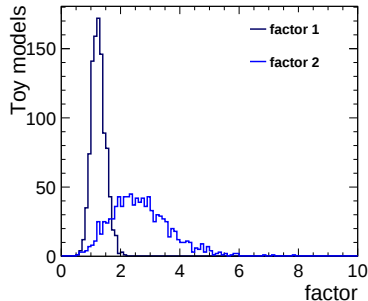
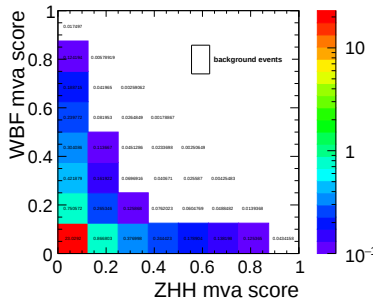
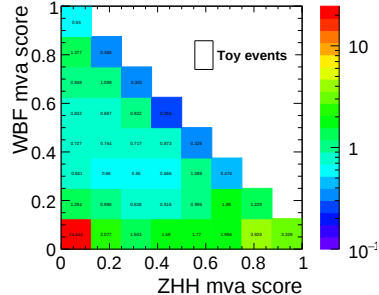
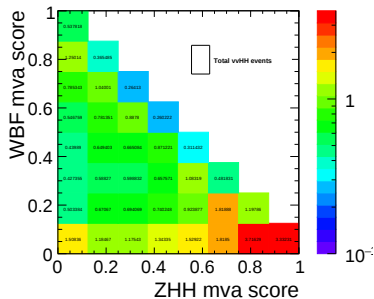
6x6 bins



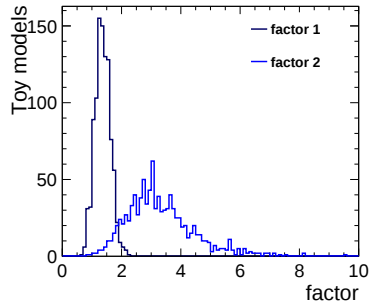
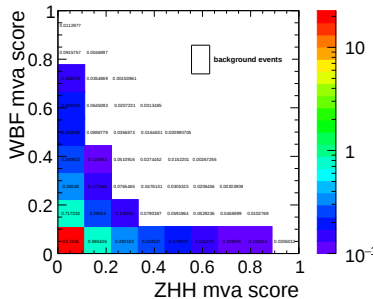
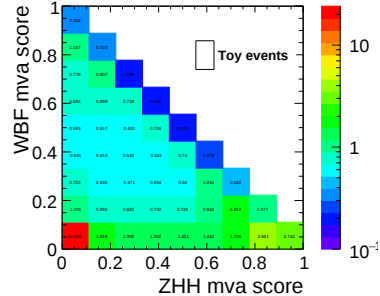
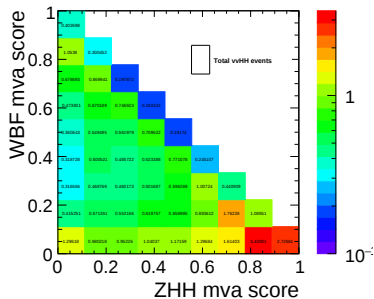
7x7 bins



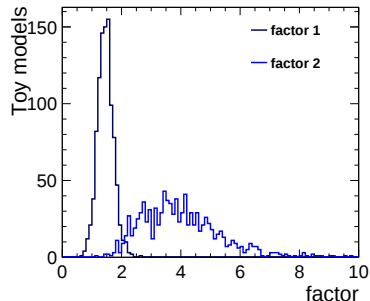
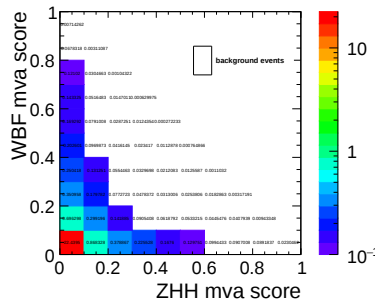
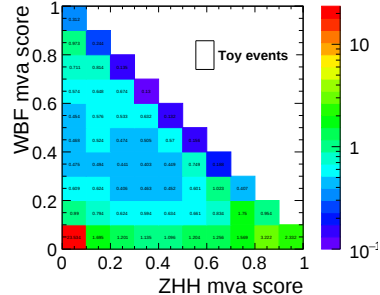
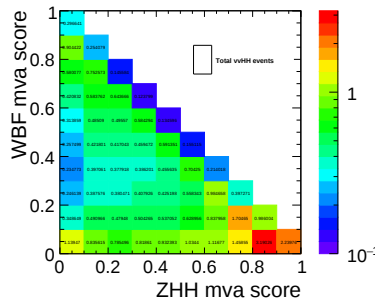
8x8 bins



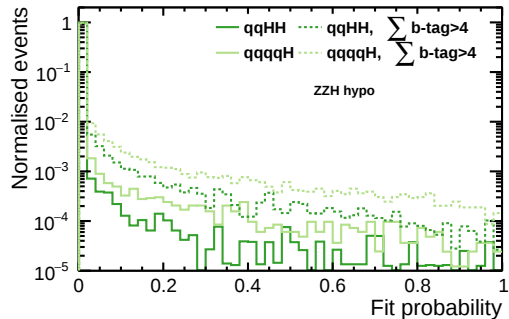
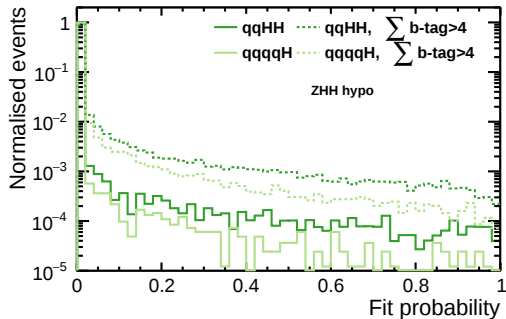
9x9 bins



10x10 bins



Kinfit in hadron channel



- bug hunting with many failing fits $\rightarrow$ seems to be resolved
- plots biased from $qqHH$ assumption of $HH \rightarrow 4b$ not true for all events