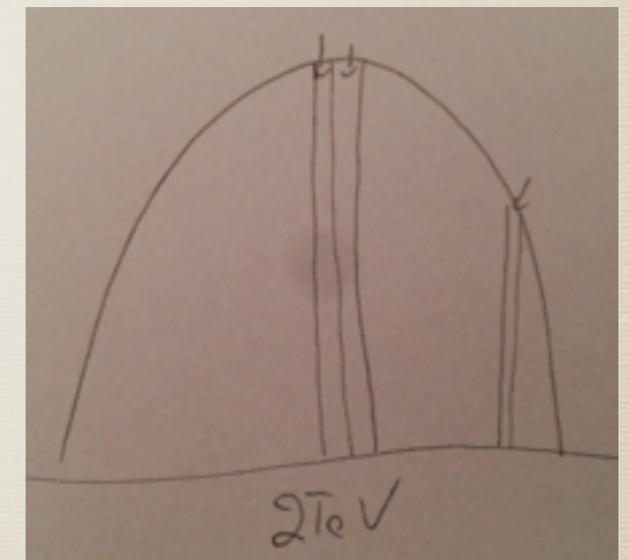


# Michael's idea

- \* To make model independent results:
- \* Assume: the acceptance is the same independent of any assumed model if one selects events with similar Higgs virtuality (so similar per event  $m_{VV}$ ).
- \* Process: make bins of size  $\sim 10$  GeV in the  $m_{VV}$  distribution, the shape inside the bin will be flat for all practical purposes whether I am in a shoulder or not. So the requirement would only be that bins in  $m_{VV}$  are sufficiently narrow that the residual shape within the bin does not matter within expected statistics.
- \* Practical proposal: generate signal with CPS shape (to be wide enough) and slice it in 10 GeV bins and check the acceptance...
- \* Plan: unfolded measurements in bins of  $m_{VV}$ .
- \* Question: can we reproduce the ggH results of MCa that uses some Higgs line shape based on an MC sample MCb, which used a different Higgs line shape (mass, width, scheme) by just reweighting the  $m_{VV}$  distribution independently for the signal and the interference with the background?



# Questions

- \* Can we find a “model independent way” to check different widths that are non narrow widths, by still using a model?
- \* Is the curve with the second peak at 500 GeV physical or is it simply due to the fact that a constant BR is used (corresponding to the pole mass).
- \* Later we'll need also to tackle the problem of the interference, how to combine the two?
- \* What is the best way to avoid to generate all the samples? We are thinking to obtain the sample with different widths by smearing one sample. We are going to check that the kinematic distributions are not going to change.
- \* Eventually can ME reweighting be used? In this case at LO?

# Optional Plan

- \* Model independent NWA results -> we have all for that?!
- \* Model independent large width -> Missing a “model” for the shape?!
- \* Model dependent for one/two models - EWS/2HDM... whatever make sense and can be done given the tools -> will follow YR<sub>4</sub> recommendations.
- \* Model independent large width a la Michael -> need to understand the assumptions...