

# Analysis compatible with E-expansion

(nuisance parameters?)

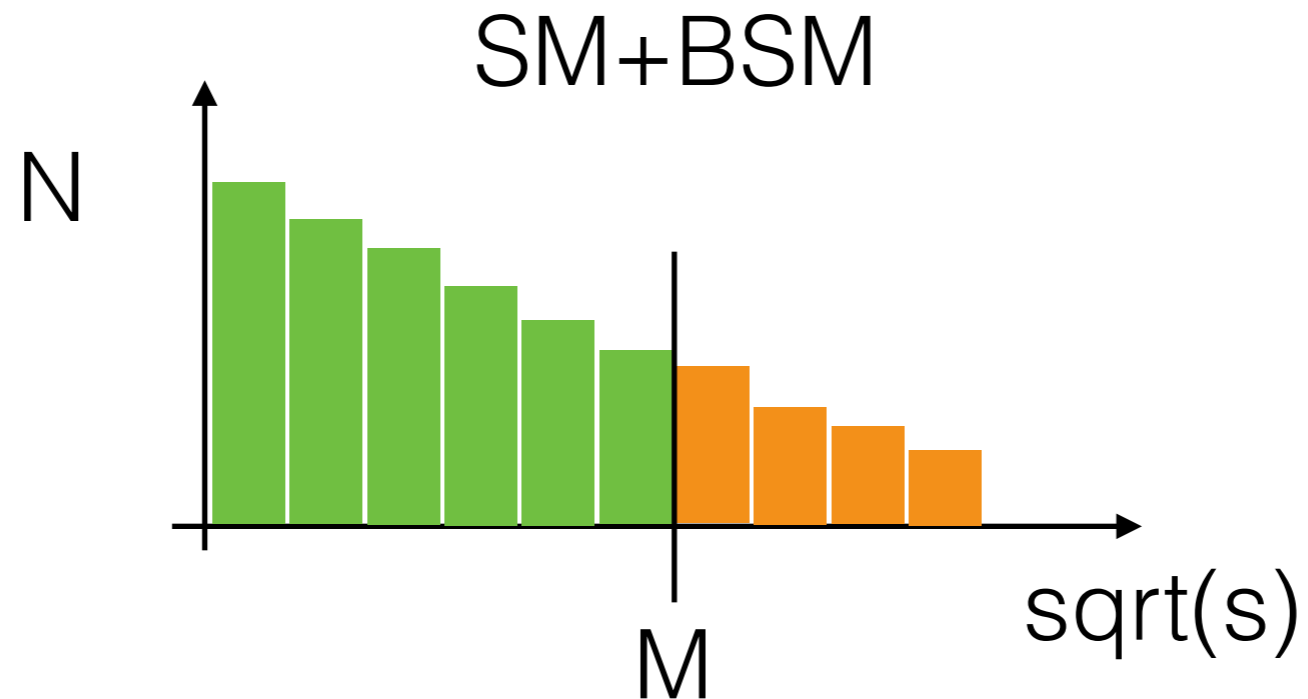
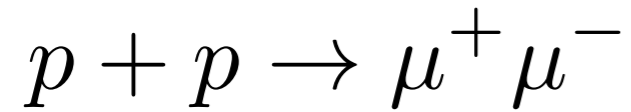
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# Problem

EFT or any parametrization that involves an expansion in energy, assumes

$$E \ll M$$

# Cut on Center-of-mas energy



For a given  $M$ :

ok  
EFT good

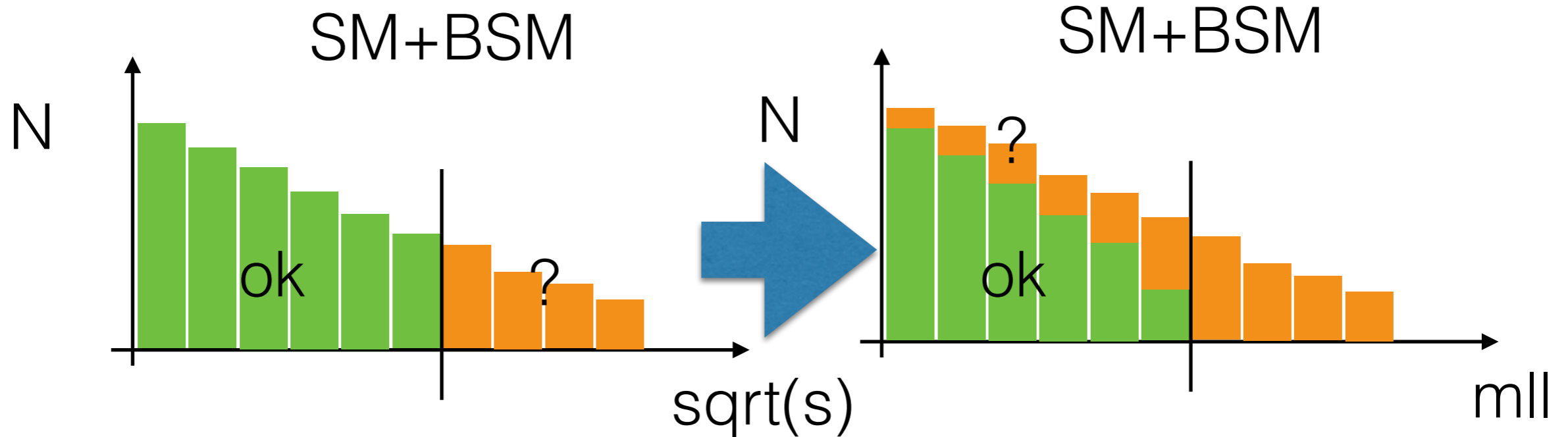
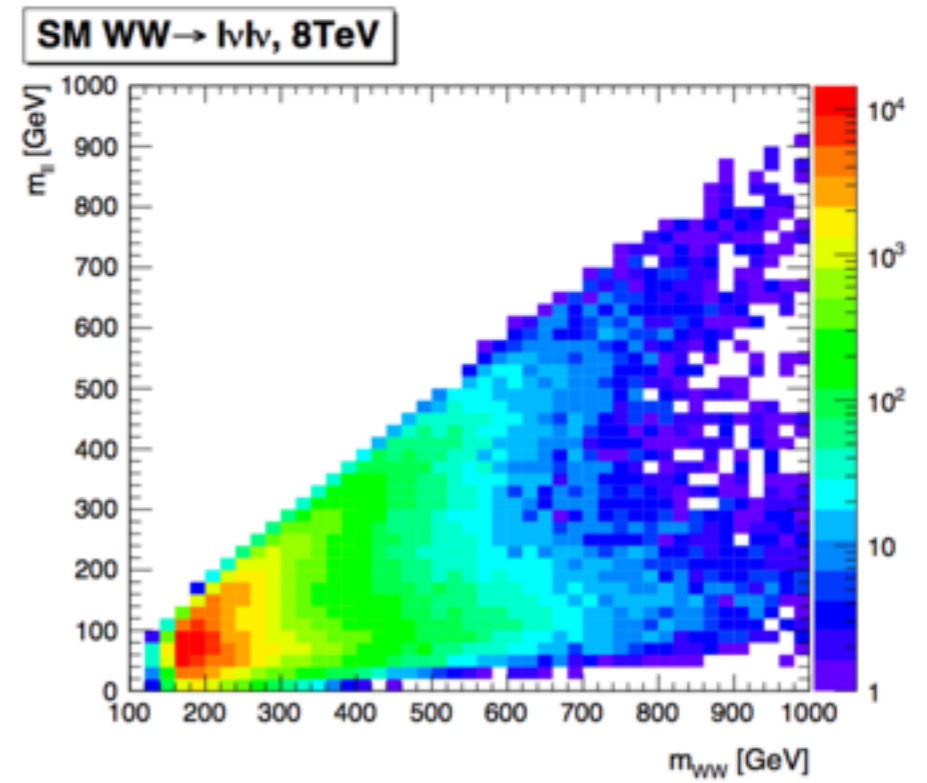
?  
EFT bad: unknown  
UV complete theory should be used

Conservative analysis uses only events below  $M$

# Cut on Center-of-mas energy

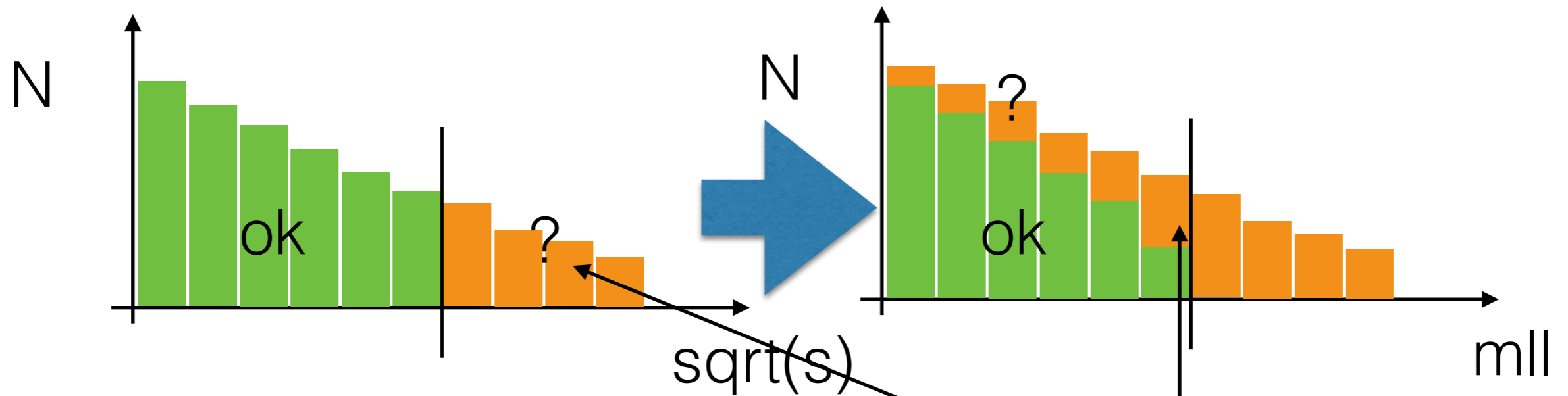


Problem:  $m_{ll} \neq \sqrt{s}$



Events below  $M$  propagate in all  $m_{ll} < M$  too!

# Cut on Center-of-mas energy



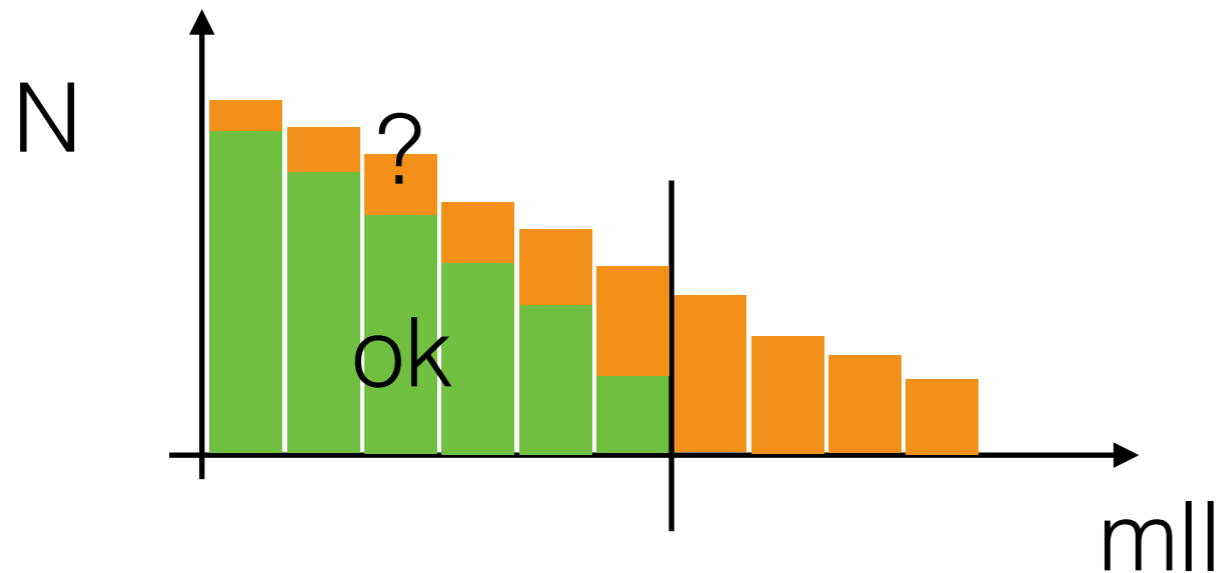
What do we know about this?

$$\sigma^{SM+BSM} |_{E>M} \geq 0 \quad \Rightarrow \quad \delta N? > 0$$

$$\chi^2 \sim \frac{(N_{SM+BSM} + \delta N? - N_{data})^2}{\text{error}}$$

Nuisance

# Cut on Center-of-mas energy



Admittedly  $\delta N_{?} > 0$  is a bit conservative for the lowest bins, which are typically not so much contaminated by physics above cutoff. Ideally nuisance should reflect correlations:

