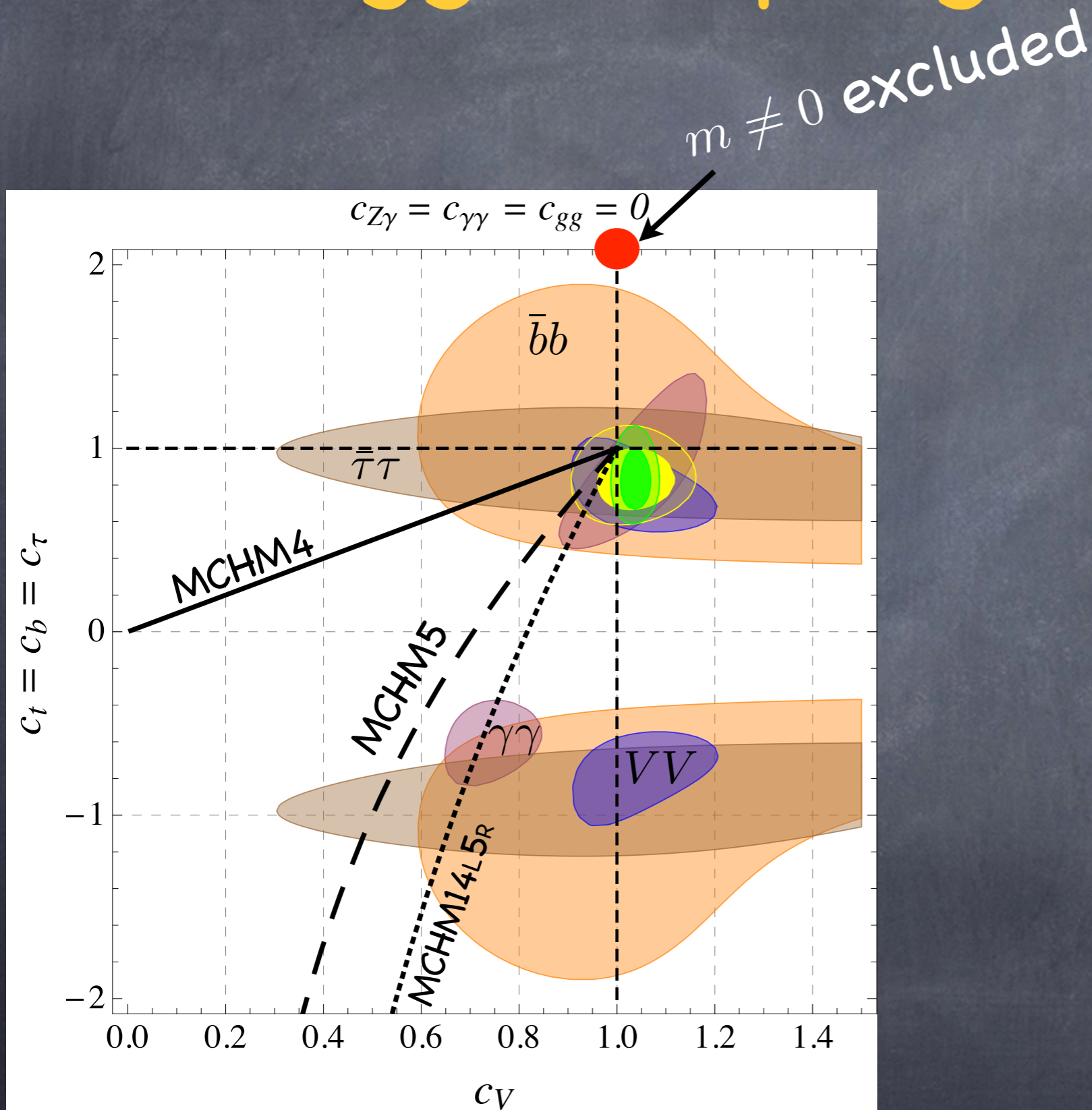
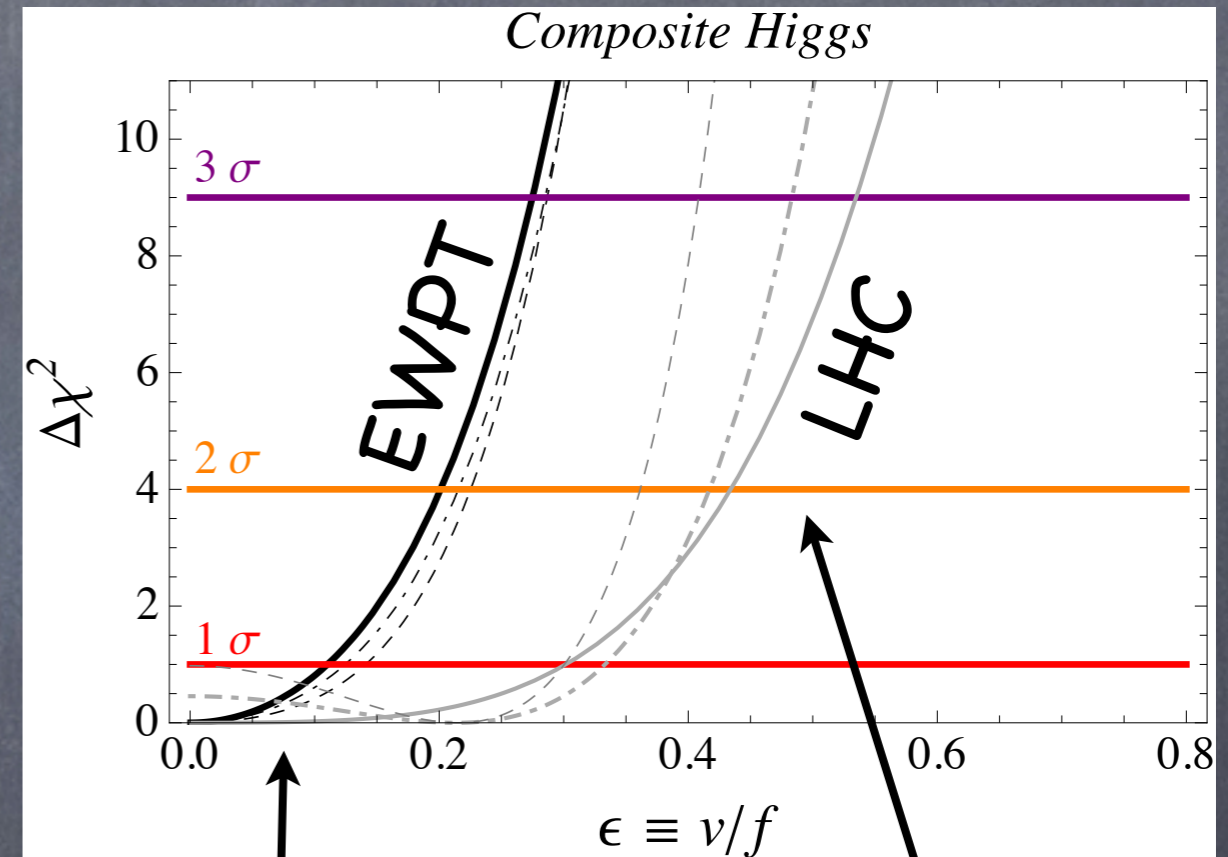
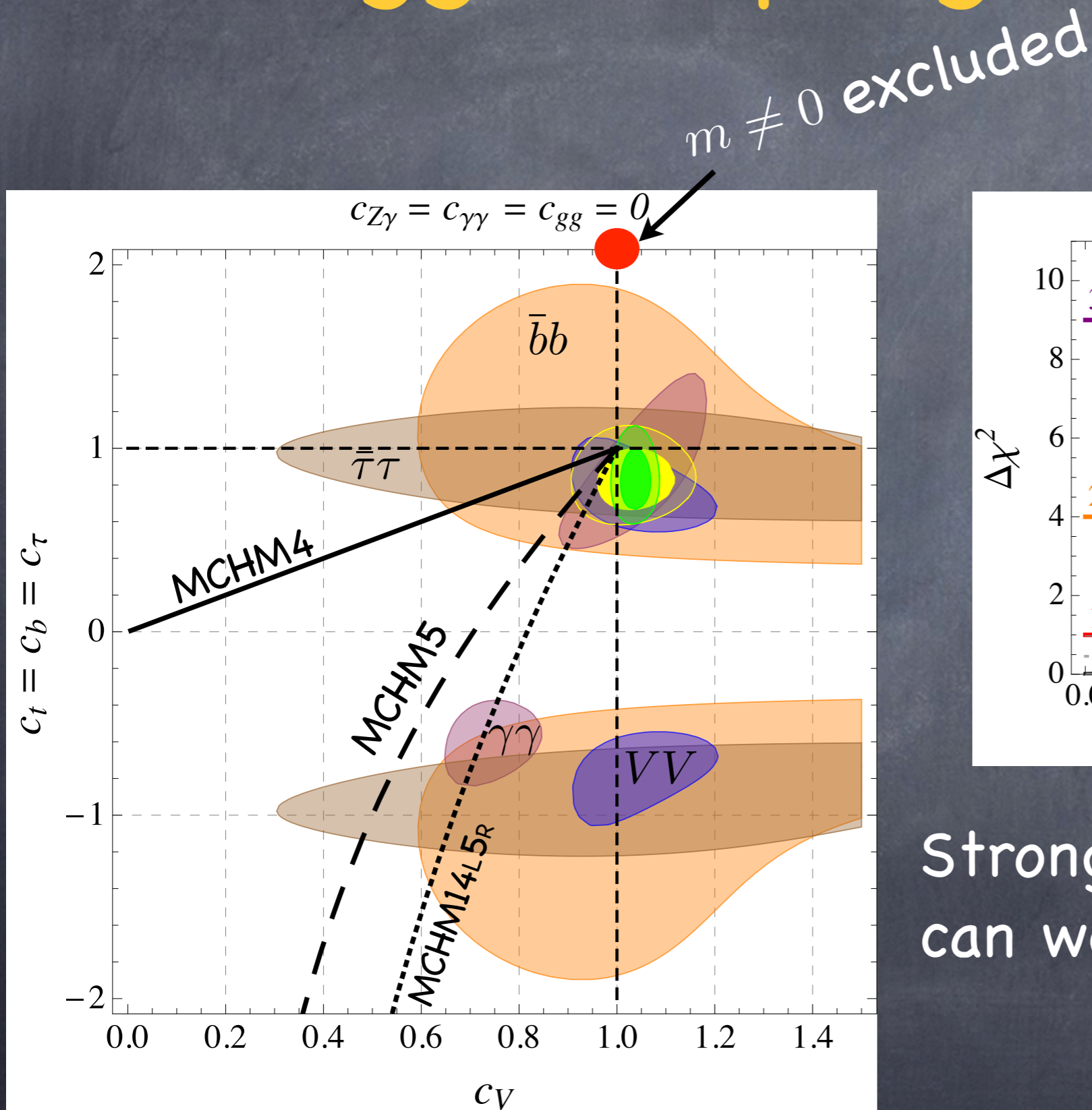


NGBHiggs couplings to SM fields



Giudice, Grojean, Pomarol, Rattazzi '07; Barbieri, Bellazzini, Rychkov, Varagnolo '07; Pomarol, FR, '12; Falkowski, FR, Urbano, '13; many more...

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NGBHiggs couplings: what was expected?

Naturalness: $v \simeq f$

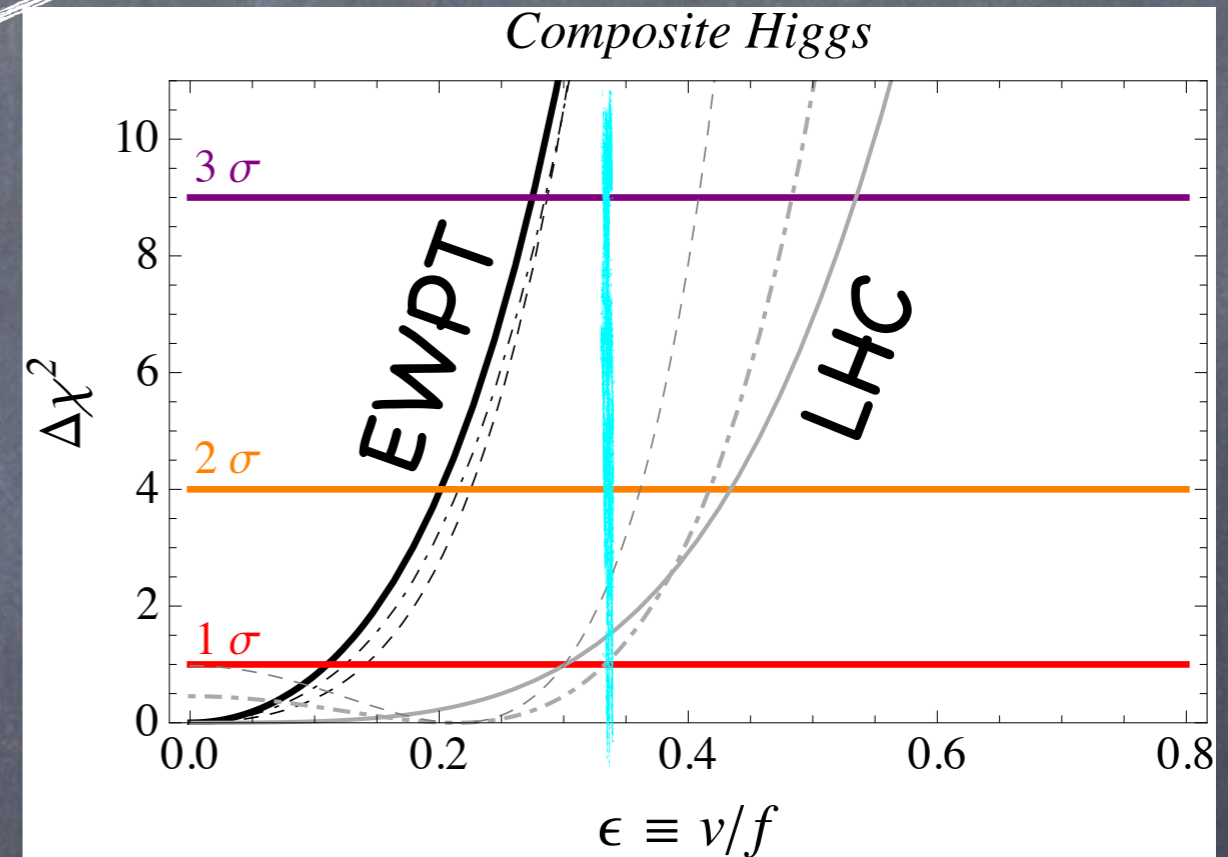
Fermion masses: $v < f$

UV contributions to S:

$$\text{wavy line with two dots} \quad \hat{S} \sim \frac{m_W^2}{m_\rho^2} \lesssim 3 \times 10^{-3}$$

$$m_\rho = g_\rho f$$

$$\Rightarrow \frac{v^2}{f^2} \lesssim 1.5 \frac{g_\rho^2}{(4\pi)^2}$$



Giudice, Grojean, Pomarol, Rattazzi '07; Barbieri, Bellazzini, Rychkov, Varagnolo '07

Klute, Lafaye, Plehn, Rauch, Zerwas '13

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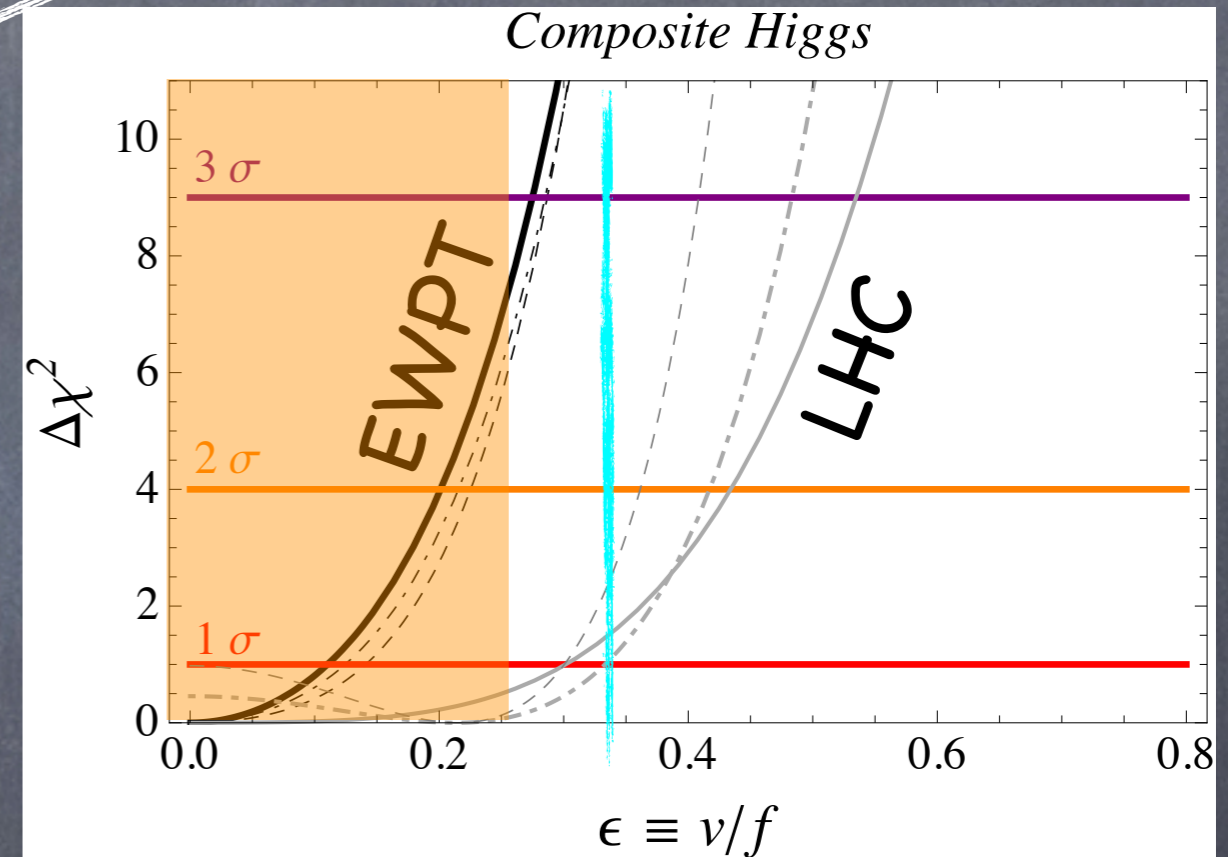
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HL-LHC

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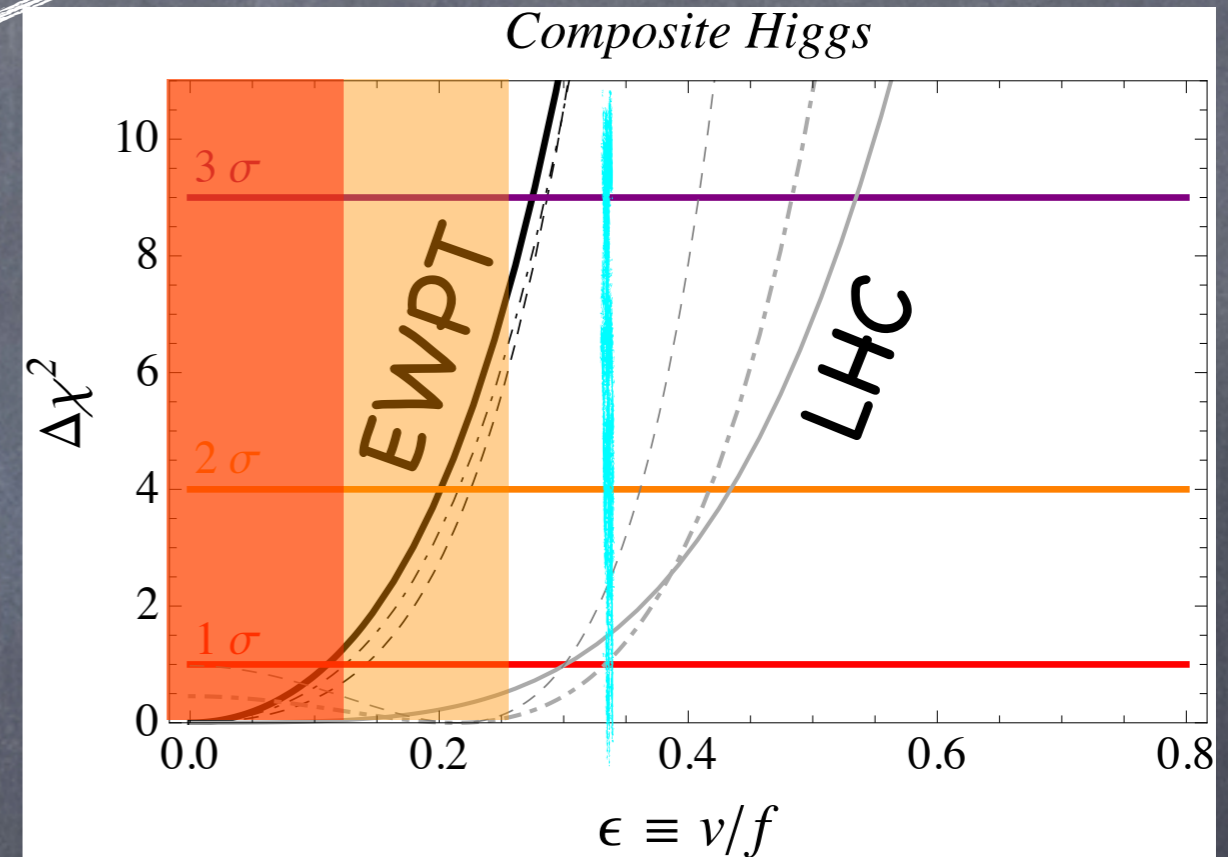
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LC

HL-LHC

Giudice, Grojean, Pomarol, Rattazzi '07; Barbieri, Bellazzini, Rychkov, Varagnolo '07

Klute, Lafaye, Plehn, Rauch, Zerwas '13