Inert doublet model: General scan results

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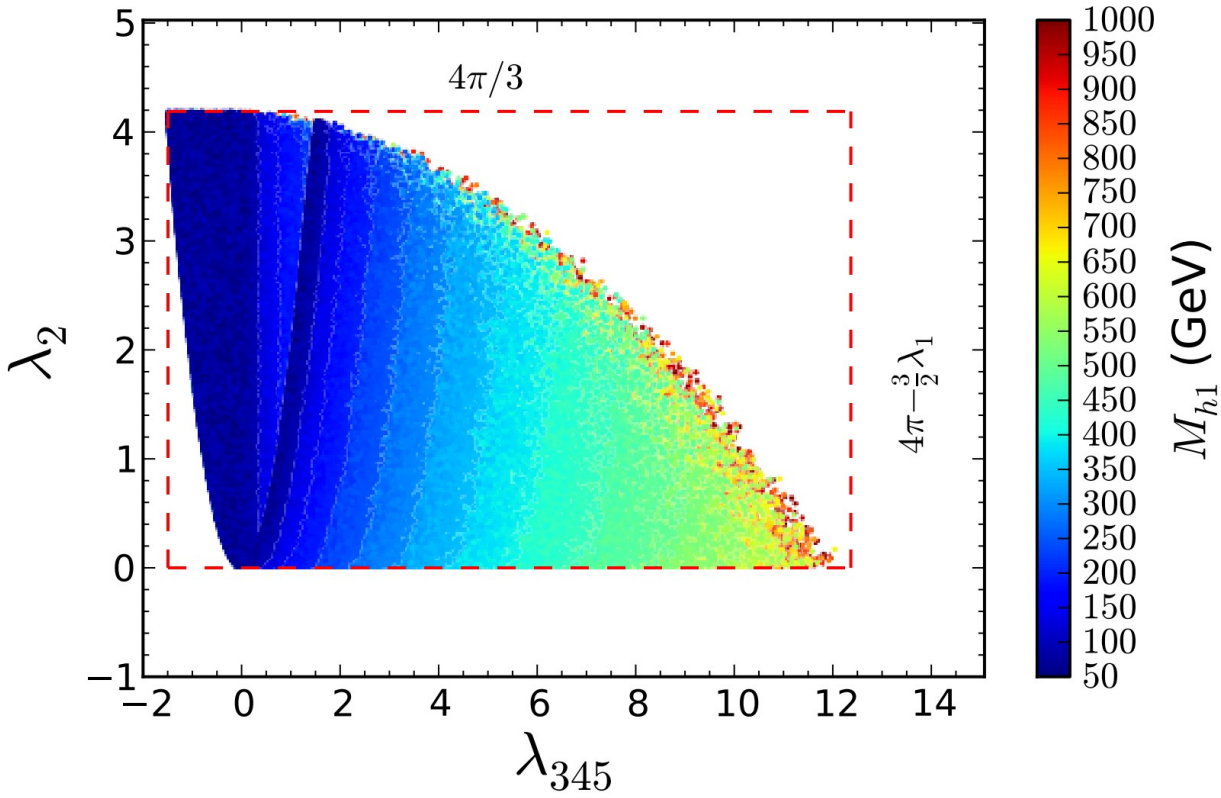
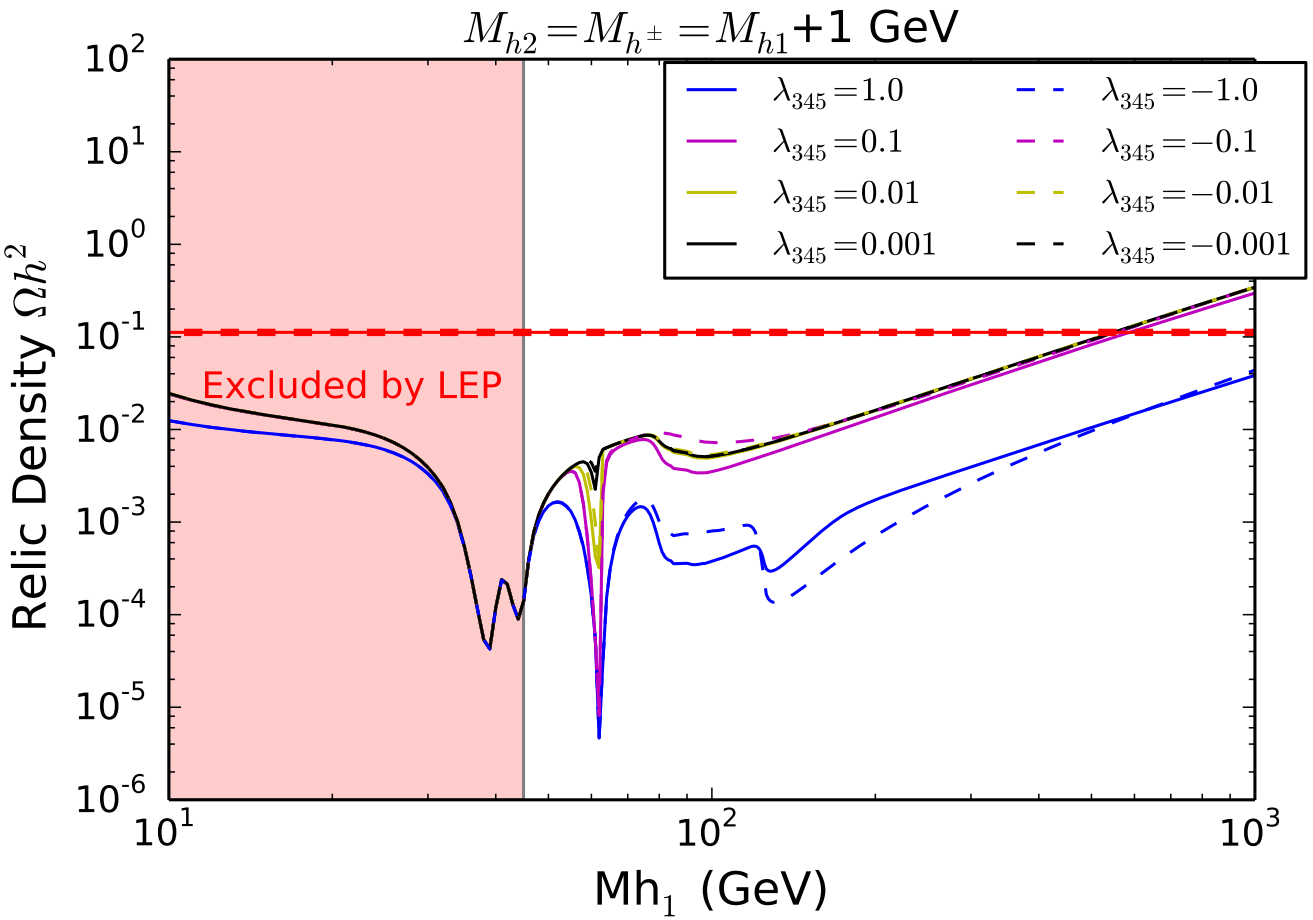
Theoretical constraints



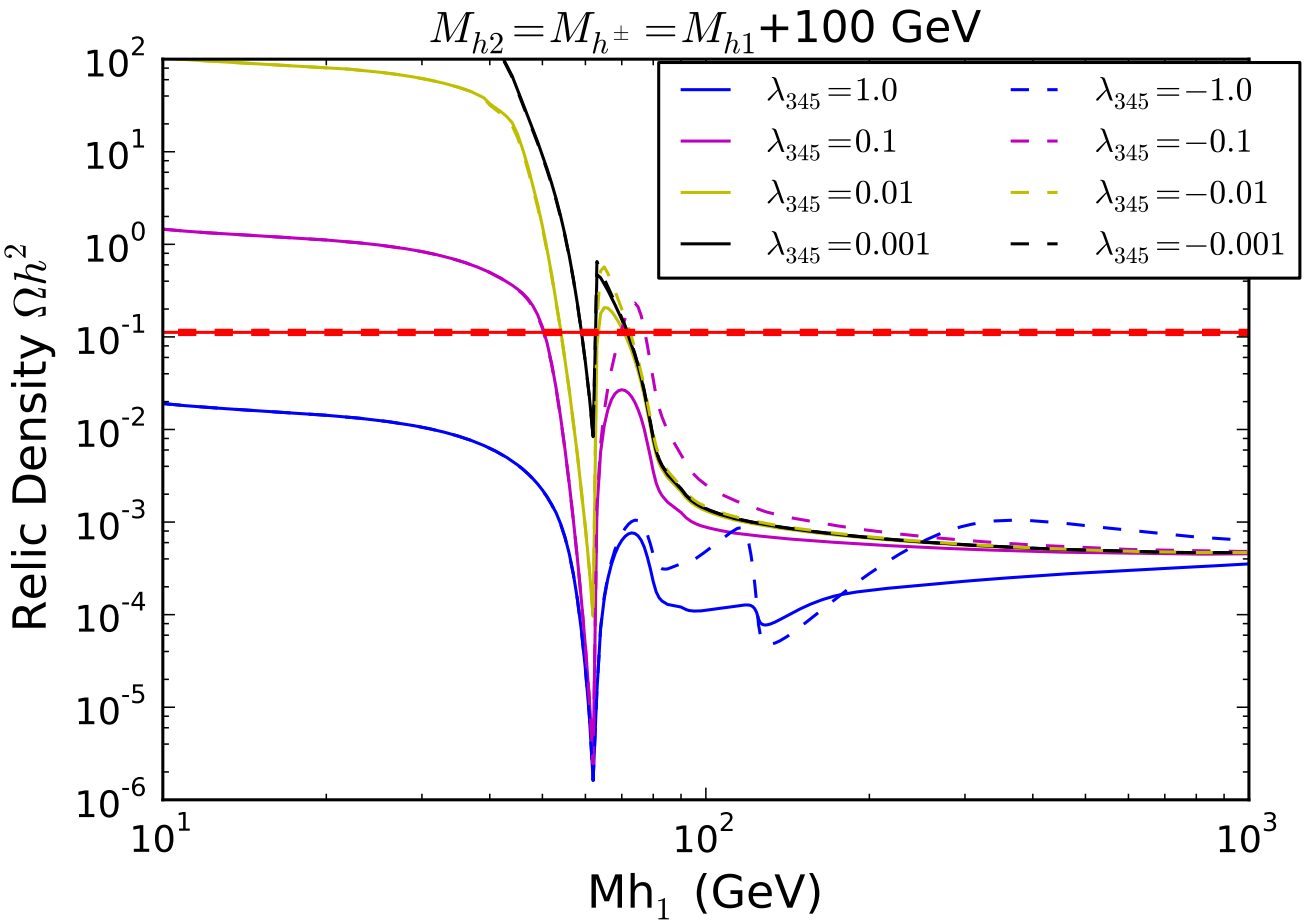
$$\mathrm{Br}(h_{125} \to \text{inv.}) < 0.28 \quad \Rightarrow \quad |\lambda_{345}| < 0.02 \div 0.04\,.$$

Relic density: small splitting



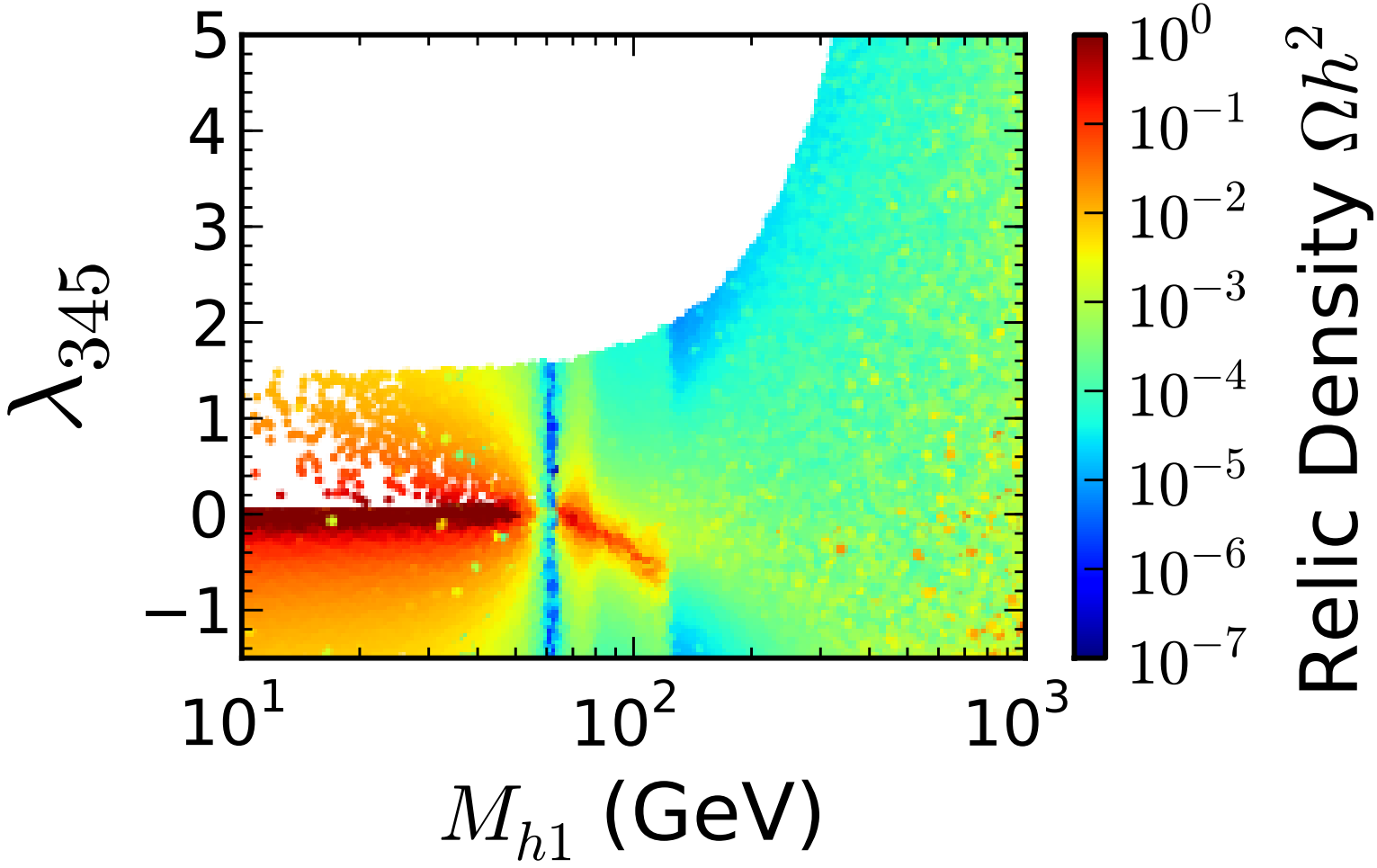
$$g_{h_1 h_1 Z_L Z_L} = \lambda_{345} + 2(M_{h2}^2 - M_{h1}^2)/v^2$$

Relic density: large splitting

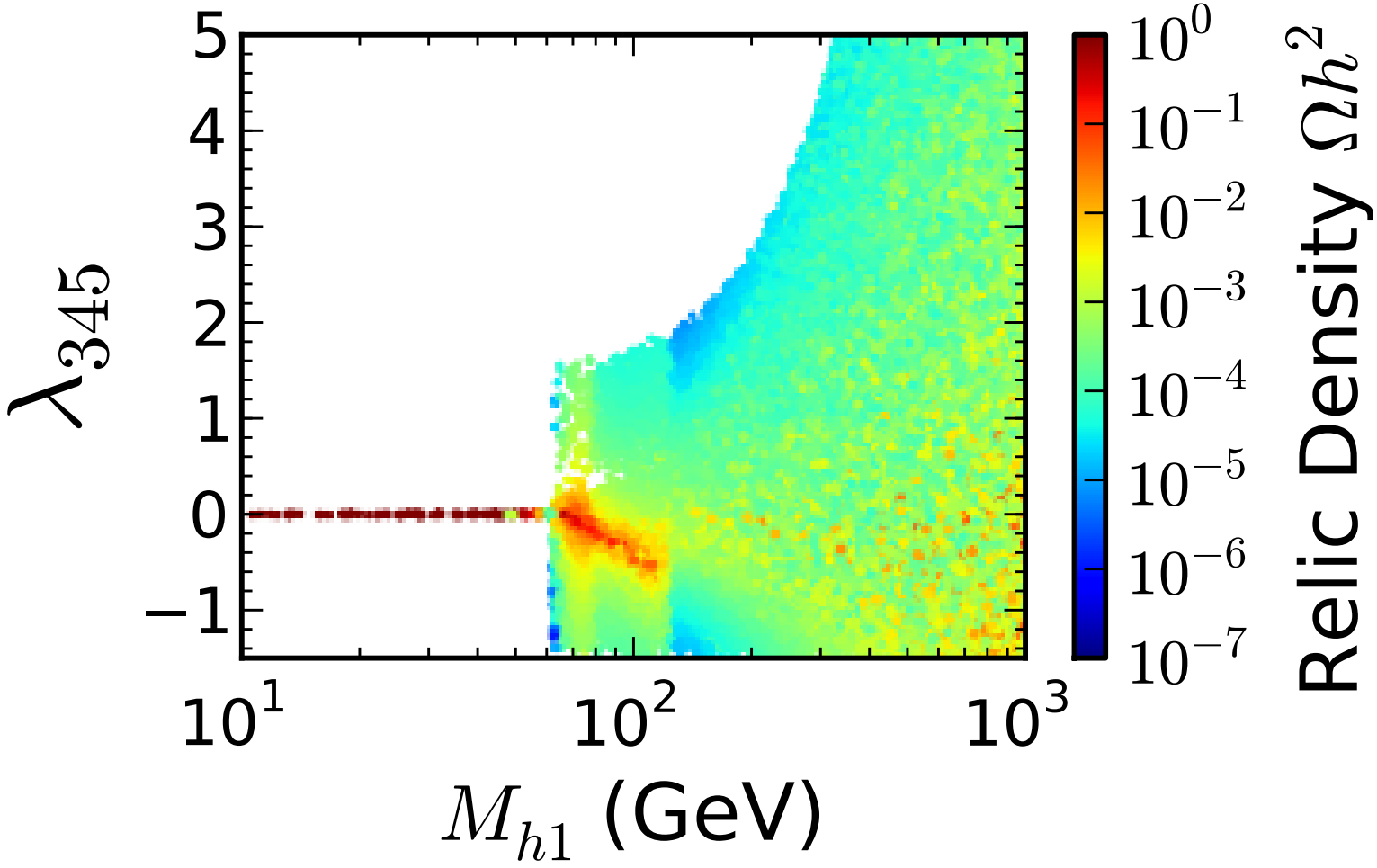


$$g_{h_1 h_1 Z_L Z_L} = \lambda_{345} + 2(M_{h2}^2 - M_{h1}^2)/v^2$$

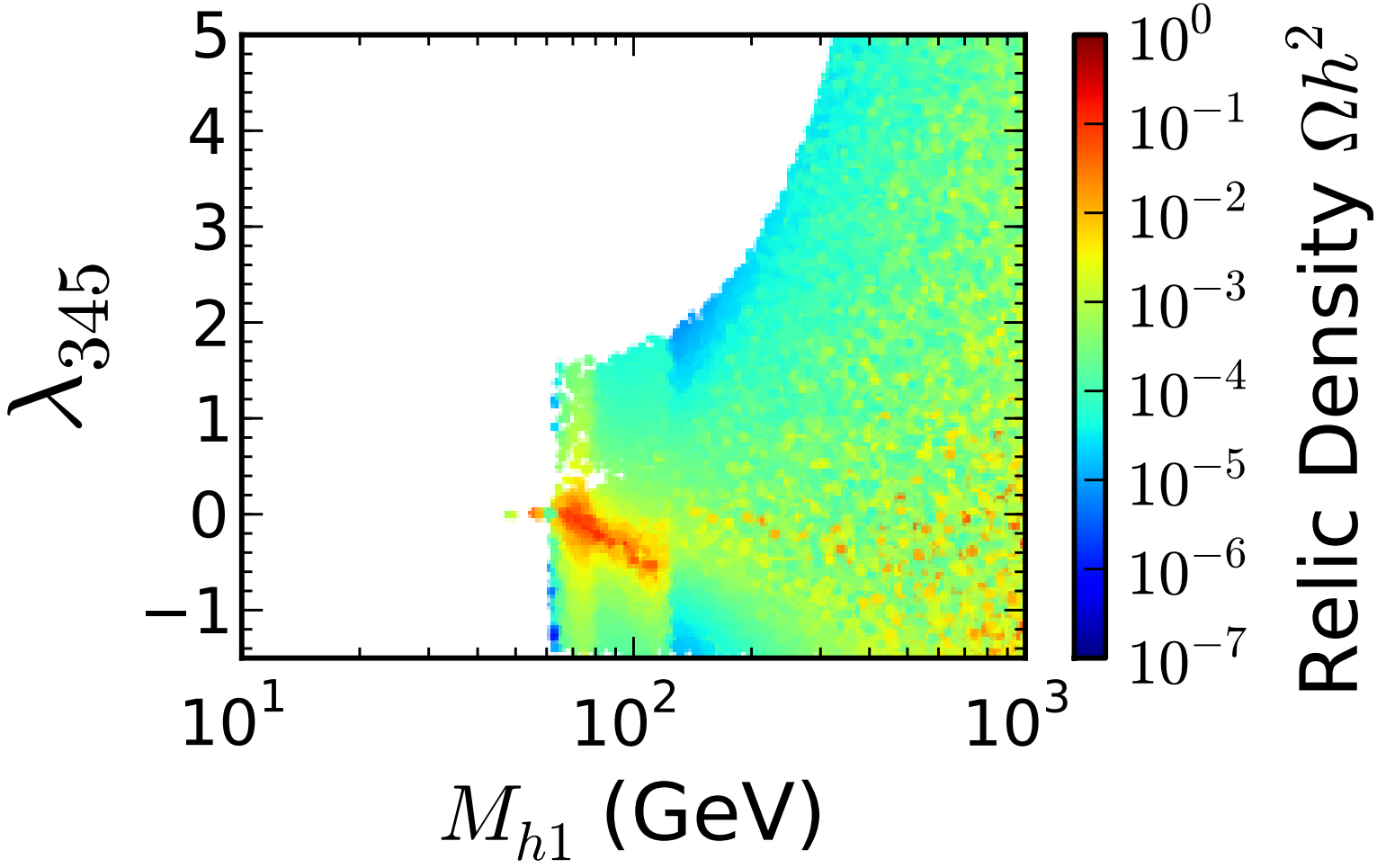
Scan: theory


λ_{345}
5
4
3
2
1
0
−1
10^1
10^2
10^3
M_{h1} (GeV)
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Relic Density Ωh^2

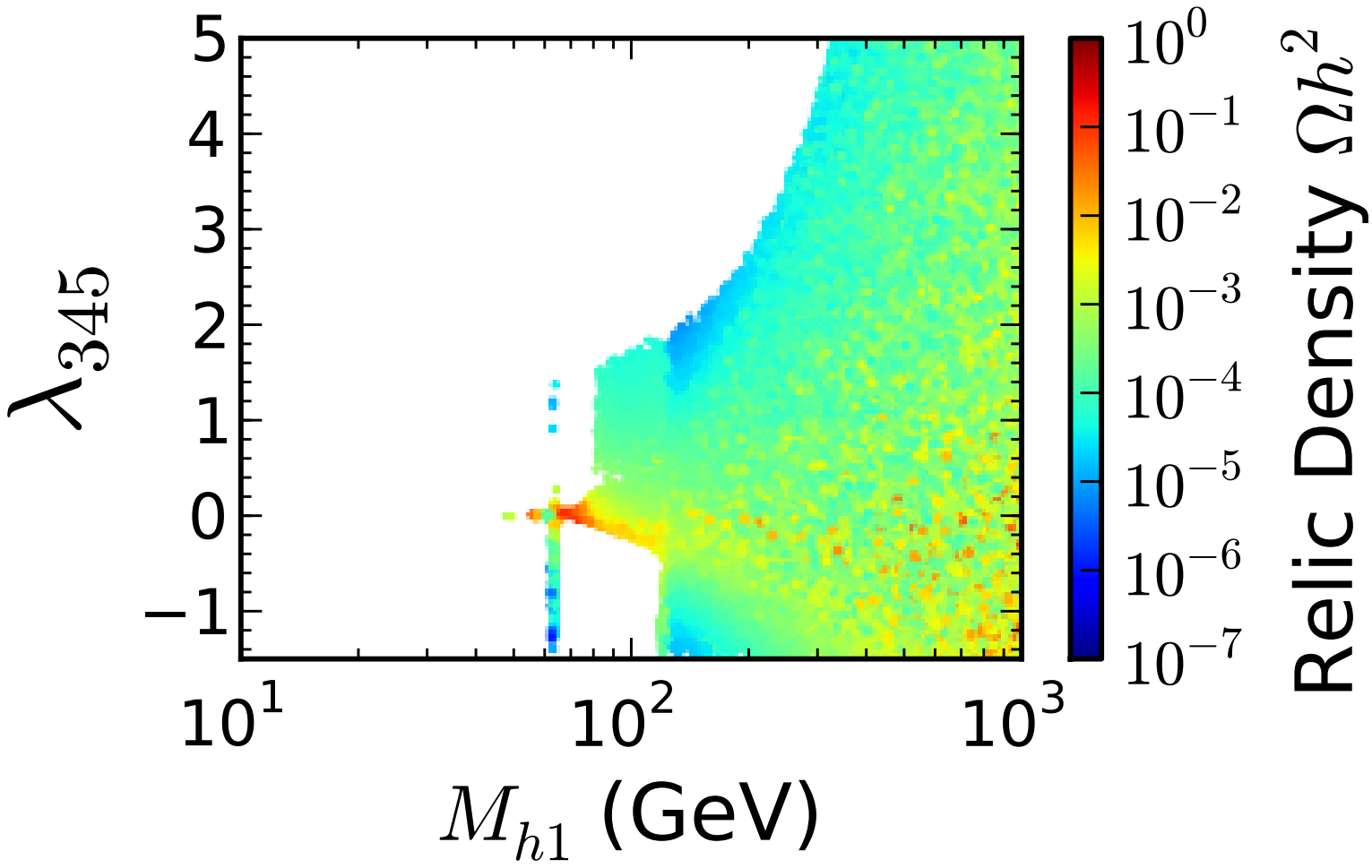
Scan: theory + LEP, EWPT, LHC



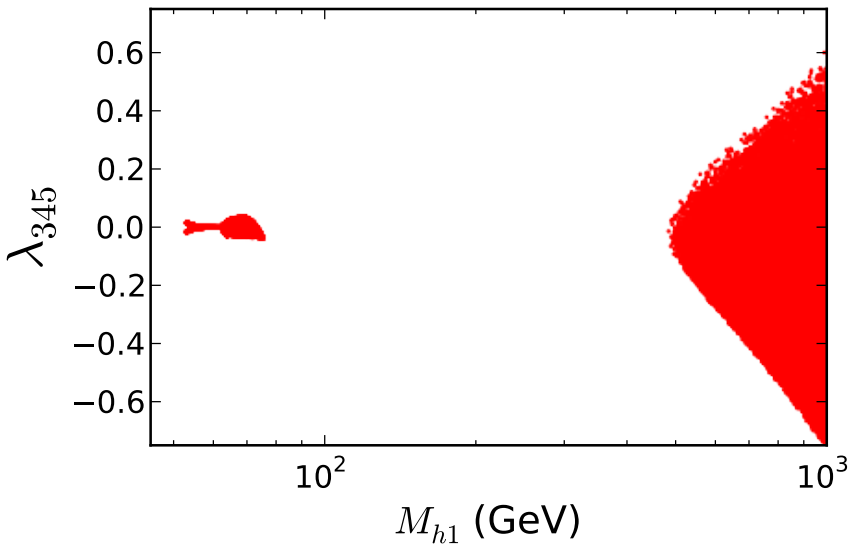
Scan: theory + LEP, EWPT, LHC + relic

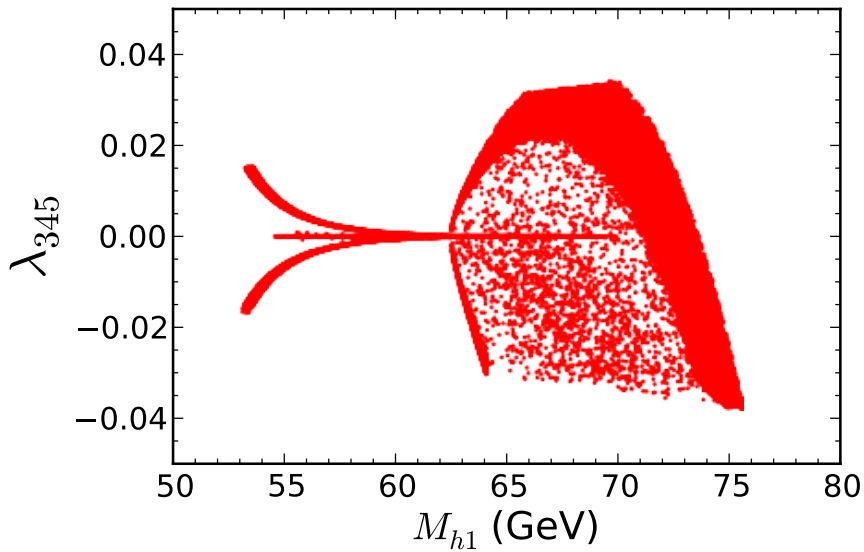


Scan: theory + LEP, EWPT, LHC + relic + LUX



Fitting relic density $\pm 2\sigma$





Future projections