Where are things up to now with GAMBIT?

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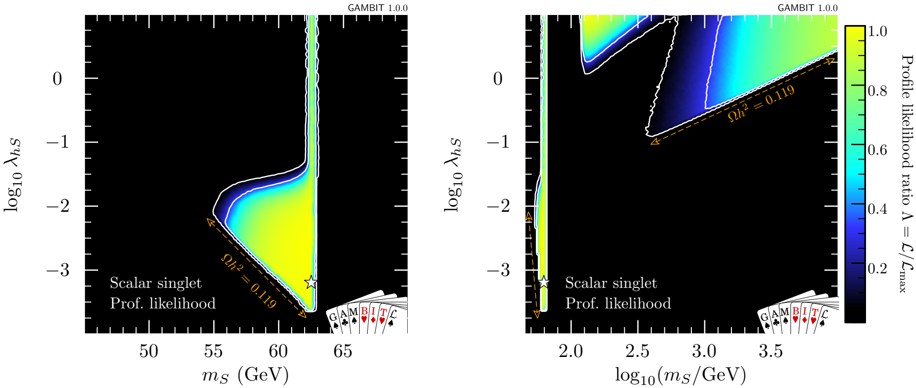
on behalf of the GAMBIT Collaboration

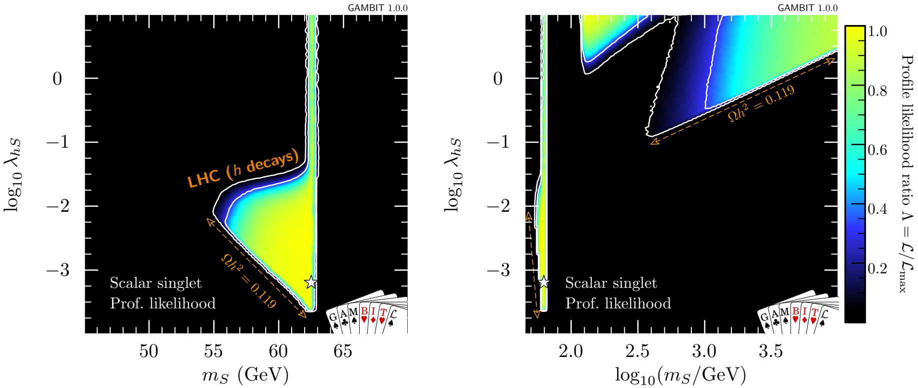
Slides at: tinyurl.com/patscott
GAMBIT: gambit.hepforge.org

Results: Scalar singlet DM (m_S, λ_{hS} + 13 nuisances)



All dark matter signals consistently scaled for predicted abundance

Results: Scalar singlet DM (m_S, λ_{hS} + 13 nuisances)



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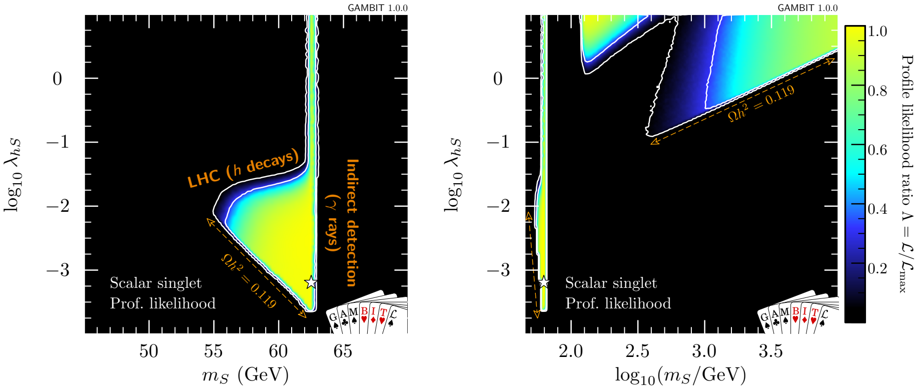

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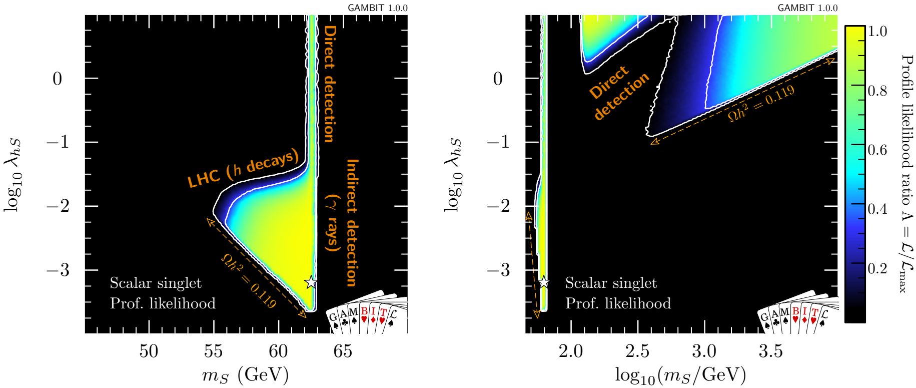

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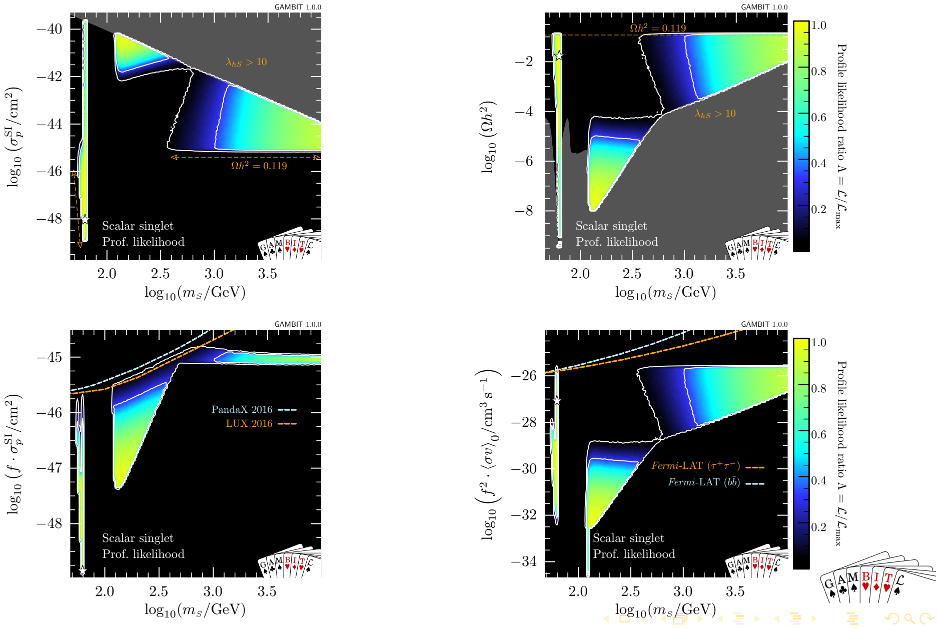

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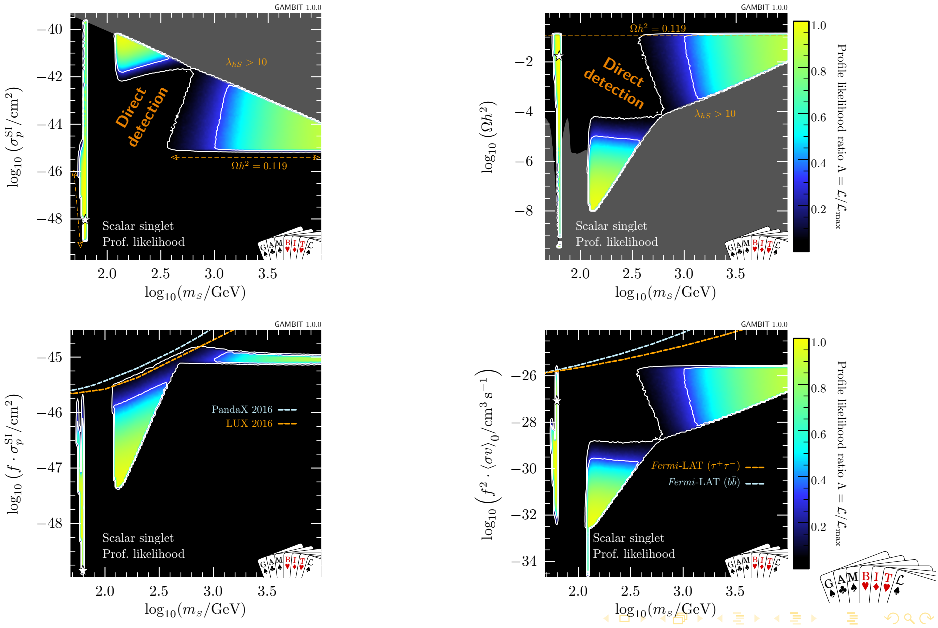
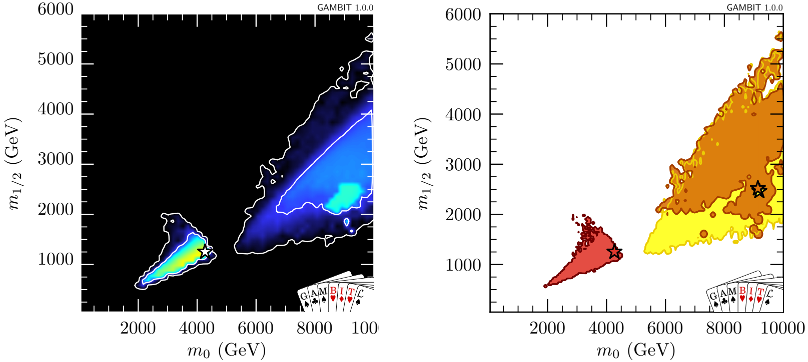
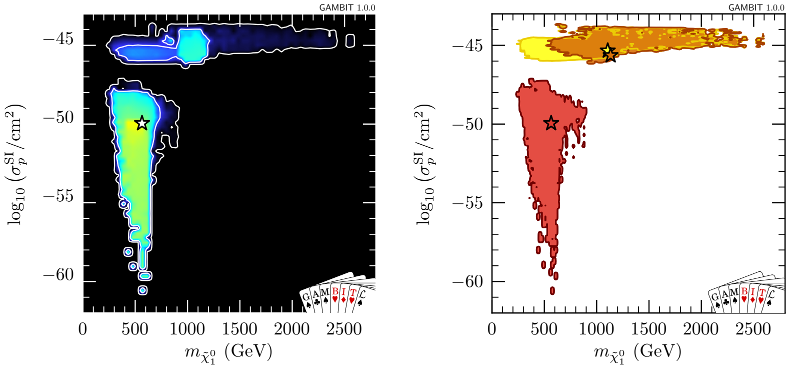


Results: GUT-scale MSSM (CMSSM)



- m_0, $m_{\frac{1}{2}}$, A_0, $\tan\beta$ + 5 nuisances
- H/A^0 funnel, $\chi^\pm$ co-annihilation, $\tilde{t}$ co-annihilation
- $\tilde{\tau}$ **co-annihilation now ruled out**
- Includes LUX 2016, Panda-X + direct simulation of LHC Run 1 & Run 2 limits.



- m_0, $m_{\frac{1}{2}}$, A_0, $\tan\beta$ + 5 nuisances
- H/A^0 funnel, $\chi^\pm$ co-annihilation, $\tilde{t}$ co-annihilation
- $\tilde{\tau}$ **co-annihilation now ruled out**
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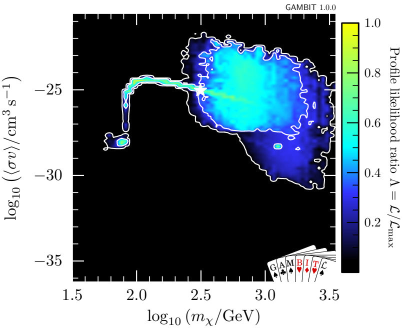
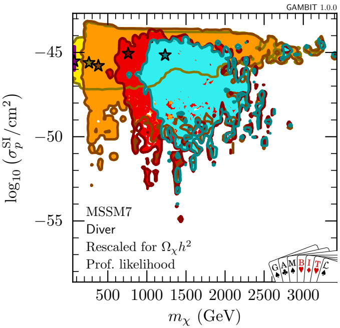
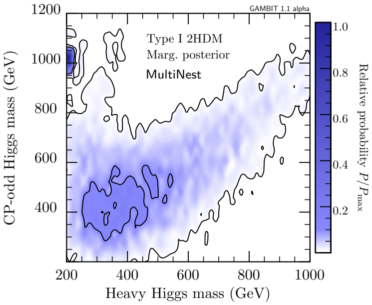
Results: Weak-scale MSSM (MSSM-7)

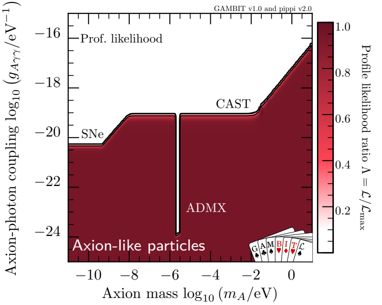


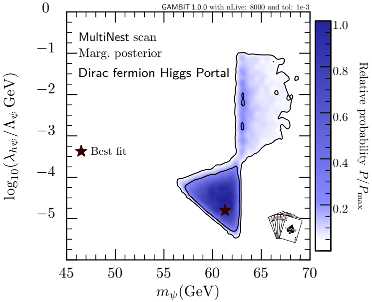


- $m_{\tilde{f}}$, M_2, A_u, A_d, m_{Hu}, m_{Hd}, $\tan\beta$ + 5 nuisances
- H/A^0 funnel, h/Z funnel, $\chi^\pm$ co-annihilation, $\tilde{t}/\tilde{b}$ co-annihilation
- Includes LUX 2016, Panda-X + direct simulation of LHC Run 1 & Run 2 limits.

Results: In the works (very preliminary)







Your favourite model here

Outlook

- Arxiv posting of first 9 papers + public code release next week
- **Next:** more **models**!

  → interfaces with Lagrangian-level tools (SARAH, FeynRules, MadGraph, CalcHEP, etc)

    → automatically derive Feynman rules and generate code to compute matrix elements and cross-sections
- **Next:** more **observables**!

  → cosmological observables, neutrino physics, helioseismological searches for new physics, . . .