Dark Matter in the $U(1)$-extended MSSM

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Based on work with Jan Kalinowski and Steve King

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But all is not well

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We need a rationale for μ to be of the SUSY breaking scale.

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$\langle S \rangle$ is set by the running of soft SUSY breaking parameters

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- Small amount of tuning remaining because $v_S \approx 10 \times v$

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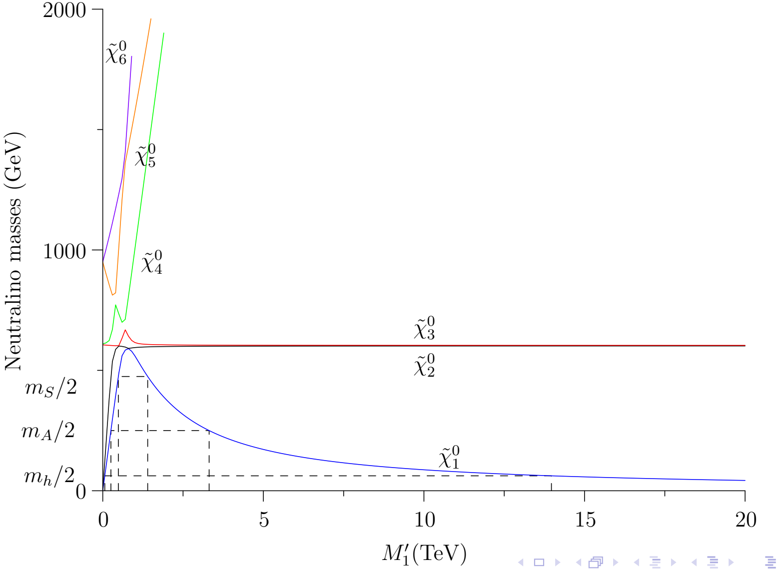
- No singlino mass term
    - See-saw structure for singlino/bino' mass
    - Never have a dominantly bino' LSP

$M_1 = M_1'$: Neutralino Masses



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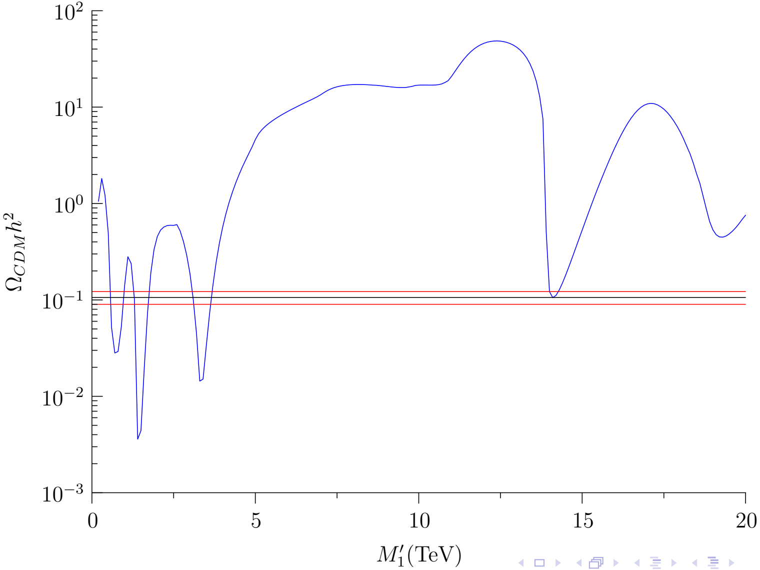

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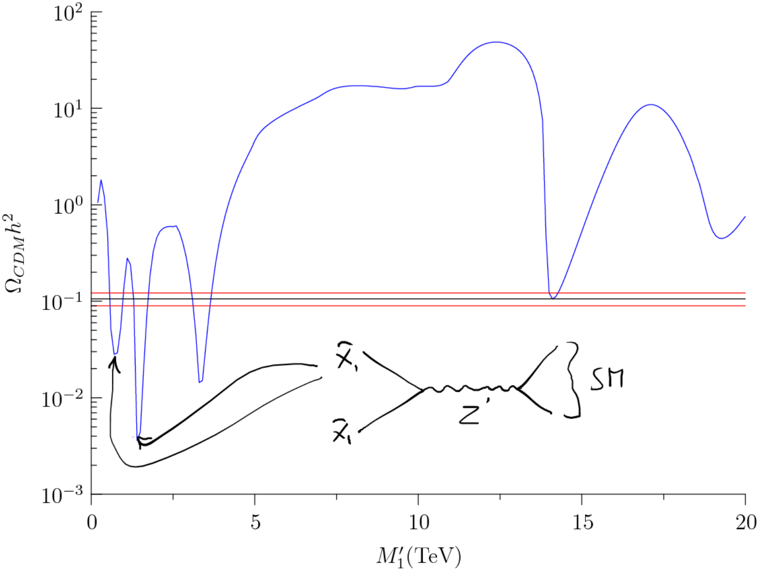

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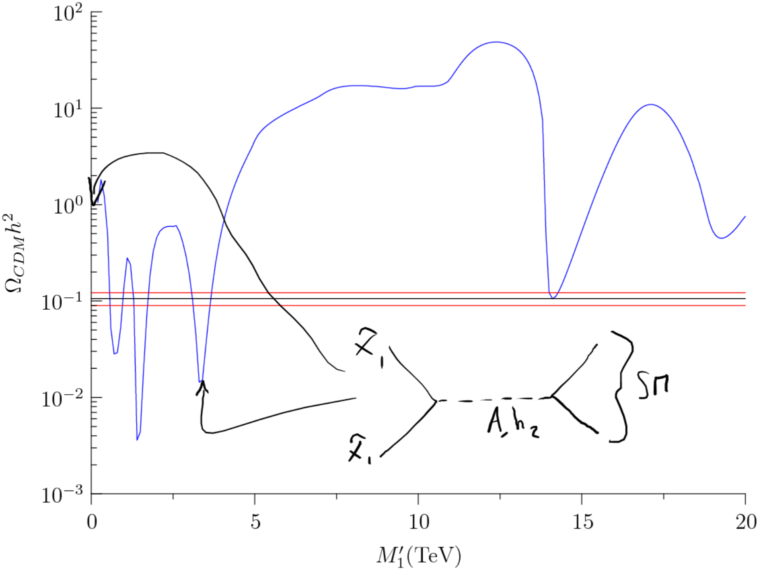

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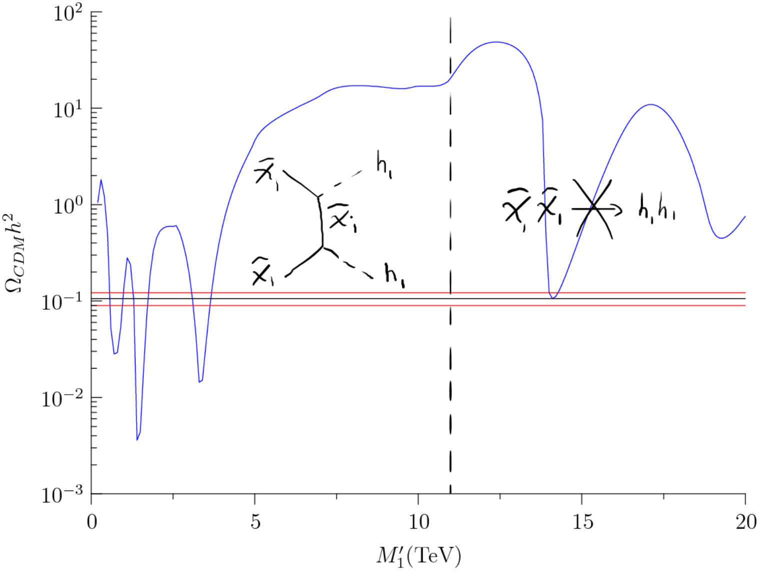

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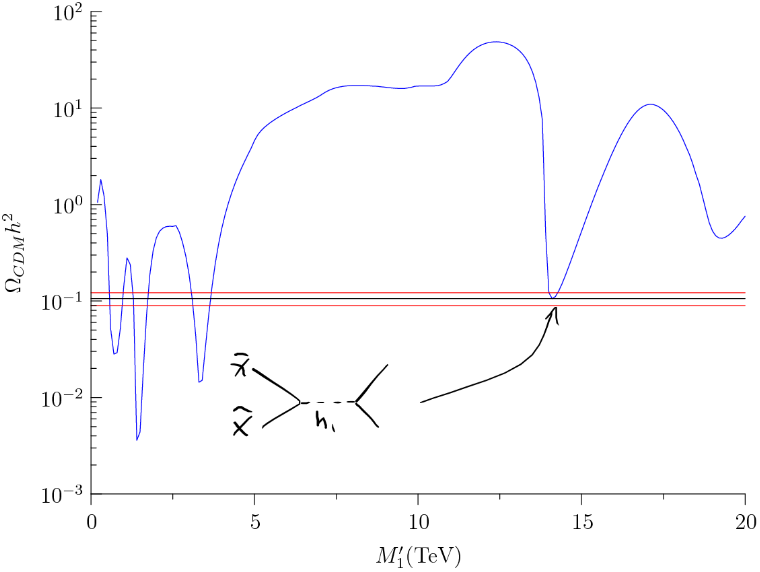

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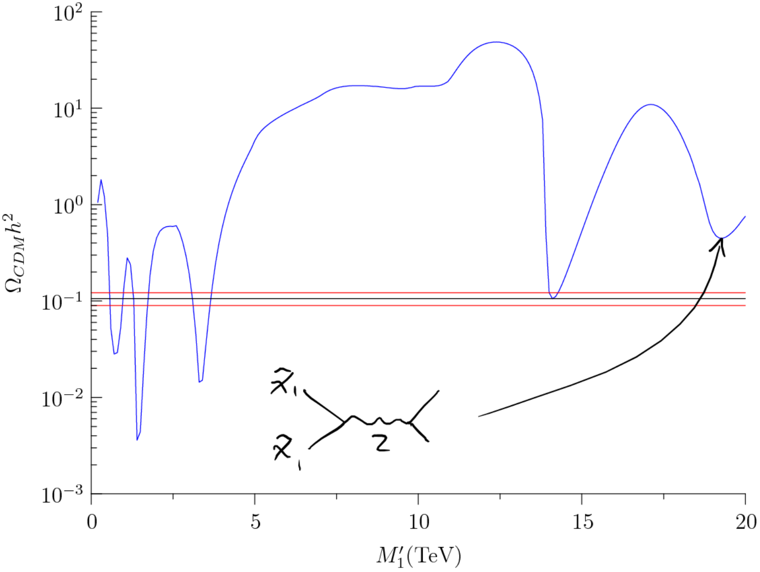
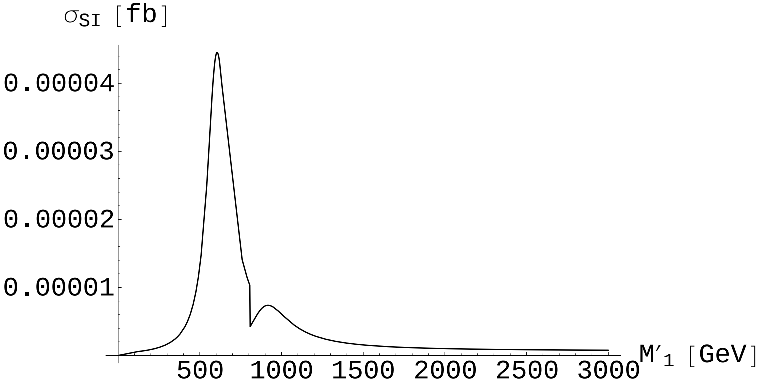


$M_1 = M_1'$: Direct Detection



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- This, along with direct detection results, will also allow us to differentiate them on the basis of their prediction of the relic density.