

Thesis outline

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Introduction

- Standard LHC schpiel, prospects for BSM
 - Brief: importance of SUSY, currently mostly unconstrained
 - Need both experimental probing and interpretation
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Theory

- SM: Brief intro, predictive power (EWPOs), problems (H: w-scattering), hierarchy problem
- BSM: Motivate via problems with SM - i.e. what BSM needs to provide
- SUSY: Basic introduction to construction
- SUSY:
 - motivate R parity via proton
 - RP implies stable neutralino
 - Stable neutralino is CDM candidate
 - Motivate low mass neutralino
 - low mass neutralino implies MET
- Minimal SUSY:
 - MSSM introduction: how to we minimally get what we want from SUSY framework
- Models of SUSY: each gets rough theory treatment, and pheno: what differentiates it, why look for it, what is the “dead end” if any
 - Universal and 2 scale models: cMSSM, vcMSSM, mSUGRA

- Non-universal models: NUHM{1,2}
 - pMSSM
 - OSET -> SMS
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Exploring SUSY models

- Making use of MET signatures: α_T
 - description
 - QCD background parameterization
 - Signal model examples
 - Likelihood model (b-jet multiplicities)
 - ... (this section needs some discussion/input on areas to be covered)
 - Results: presented in cMSSM and SMS with scaling (i.e. each of the three results so far)
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Constraining models of SUSY

- Standard constraints
 - Ωh^2

```
def test()  
    myObj.method(globals(),True,None,literal, f)
```

Future prospects for SUSY / BSM

Conclusion