

Measurement of the Jet Transverse Momentum Resolution and Response Tails and Application in a QCD Background Estimation Method in a Search for New Physics at CMS

Matthias Schröder

March 13, 2012

Contents

| | |
|--|----------|
| 1. Introduction | 3 |
| 2. The standard model and super symmetry | 4 |
| 3. Detector | 5 |
| 4. Search for New Physics in Events with Jets and Missing Transverse Momentum | 6 |
| 4.1. The RA2 analysis | 6 |
| 5. Conclusions | 7 |
| A. Appendix | 8 |
| B. Todo | 9 |
| B.1. To-be-defined | 9 |
| B.2. Symbols | 9 |
| B.3. Miscellaneous | 9 |
| B.4. Style | 10 |
| B.5. Language | 10 |
| B.6. References | 10 |

1. Introduction

2. The standard model and super symmetry

3. Detector

4. Search for New Physics in Events with Jets and Missing Transverse Momentum

4.1. The RA2 analysis

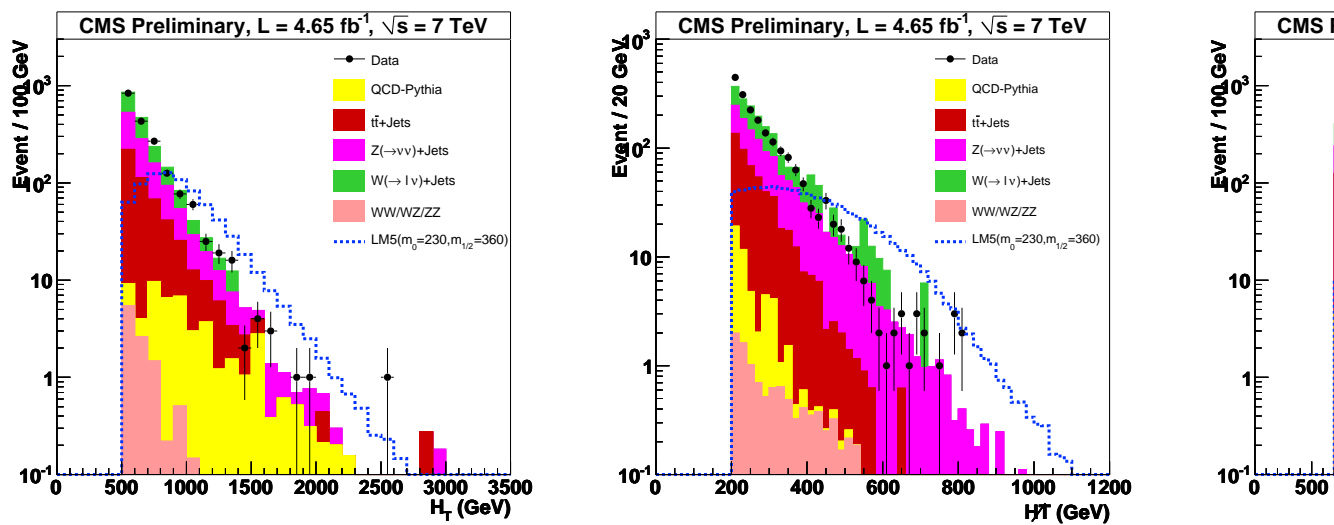


Figure 4.1.: **TODO:** Add caption, point out difference to proper combination

5. Conclusions

A. Appendix

B. Todo

B.1. To-be-defined

- Dijet
- leading
- p_T^{gen}
- non-Gaussian tails
- Sprachregelung: MC, full simulation, CMS simulation, ...
- Sprachregelung: dijet p_T spectrum
- Sprachregelung: try not to use dijet when the realistic events are meant, use dijet topology or sth instead

B.2. Symbols

- Fix p_T , lower T
- Define figure environment
- Consistent symbols for response and asymmetry
- Consistent usage of σ : either with dimension GeV, i.e. resolution becomes σ/p_T , or dimensionless
- Usage of \equiv vs $=$

B.3. Miscellaneous

- Consistency
 - usage of \equiv vs $=$
- Fix bibliography style
 - use doi citations
 - add arXiv citation
 - use collaboration key
 - add href to CMS PAS citations
- Move tables to Appendix

B.4. Style

- margins
- header: one side is chapter, other side is current section

B.5. Language

- Possessiv statt of: group of nouns: both, of more formal, single substantive: s?
- affected by: eher negativ betroffen, effected by: neutral
- independent of (effects, persons) or of/from (political)
- weniger passiv: 'the number is correlated with' → 'the number correlates with'
- check preposition after 'originate'
- impact from / of?

B.6. References

- Hauke's thesis already published / to-be-published? Reference for asymmetry method

Bibliography