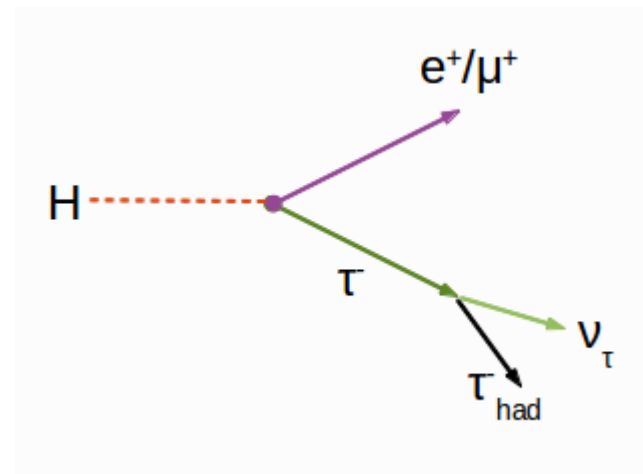


Examining Decay Mechanisms of the Higgs Boson

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A Feynman diagram of a flavor-violating decay.

Motivation

- Determine if the Higgs boson obeys the Standard Model of Particle Physics
- Standard Model decays or Flavor-Violating decays
- If we look at the right numbers, we can find flavor violations at particle colliders
- Verify (or not) the Standard Model

Research Questions

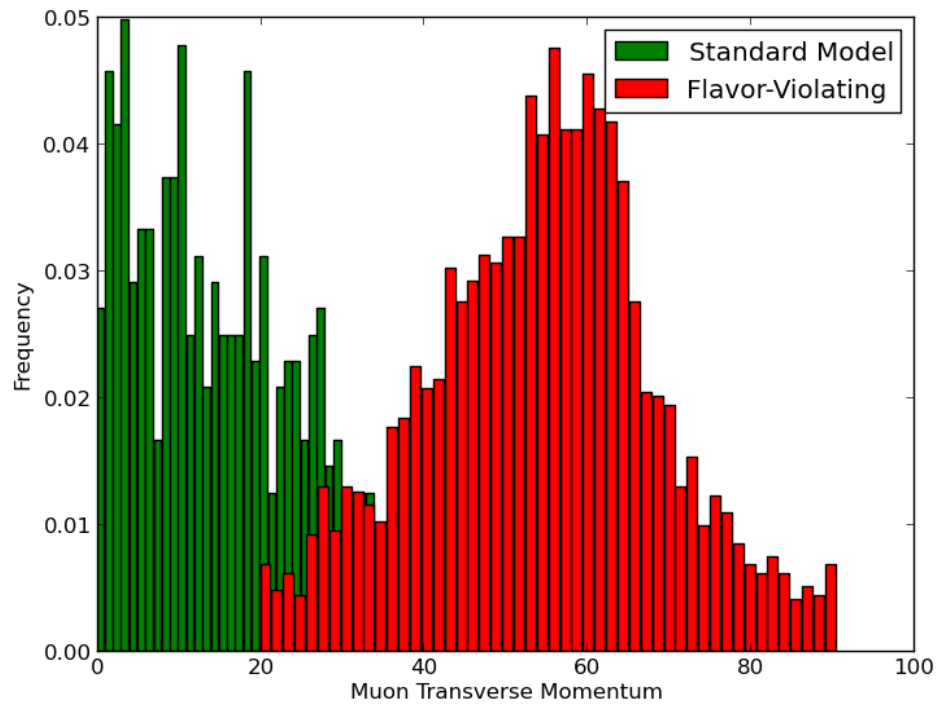
- 1) How are transverse momentum, ΔR between a tau and a neutrino, and ΔR between a muon and a tau, different between decay mechanisms?

ΔR is defined as the angle between two transverse momenta.

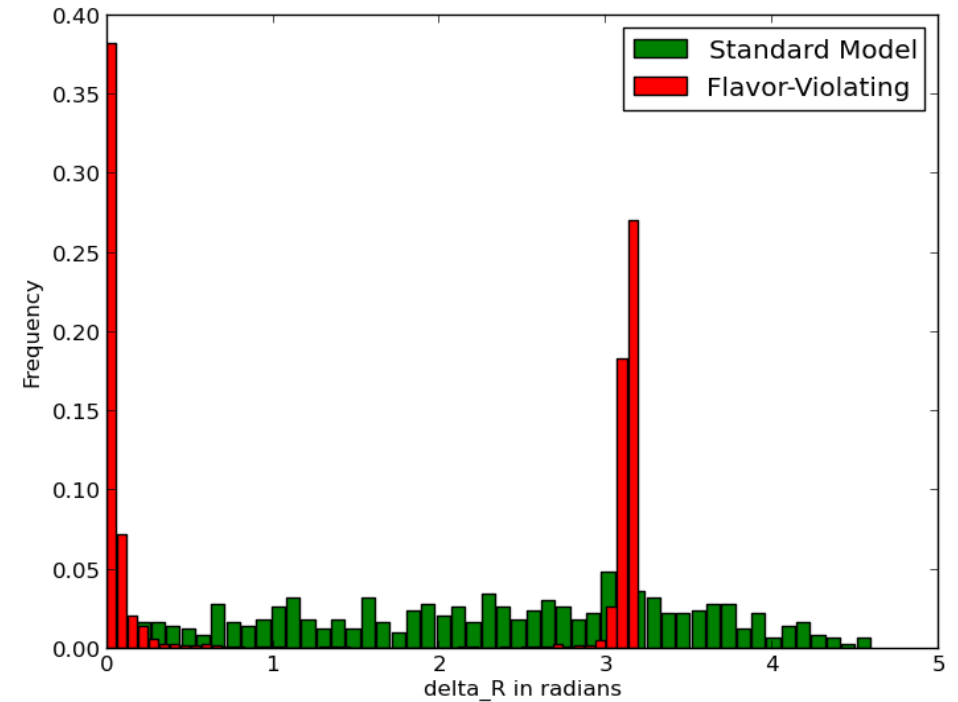
- 2) How do we select the above variables and decays so that we know whether the decay has flavor violation? Otherwise known as “making cuts”.
- 3) How well does examining the quantities from (1) predict events with a Higgs decay into a τ, μ final state?

Results

Transverse Momentum, GeV



ΔR



Conclusion

- It's really easy to discern between flavor-violating decays and Standard Model decays if you look at the right quantities.

