Software Review: Update

8 July 2022

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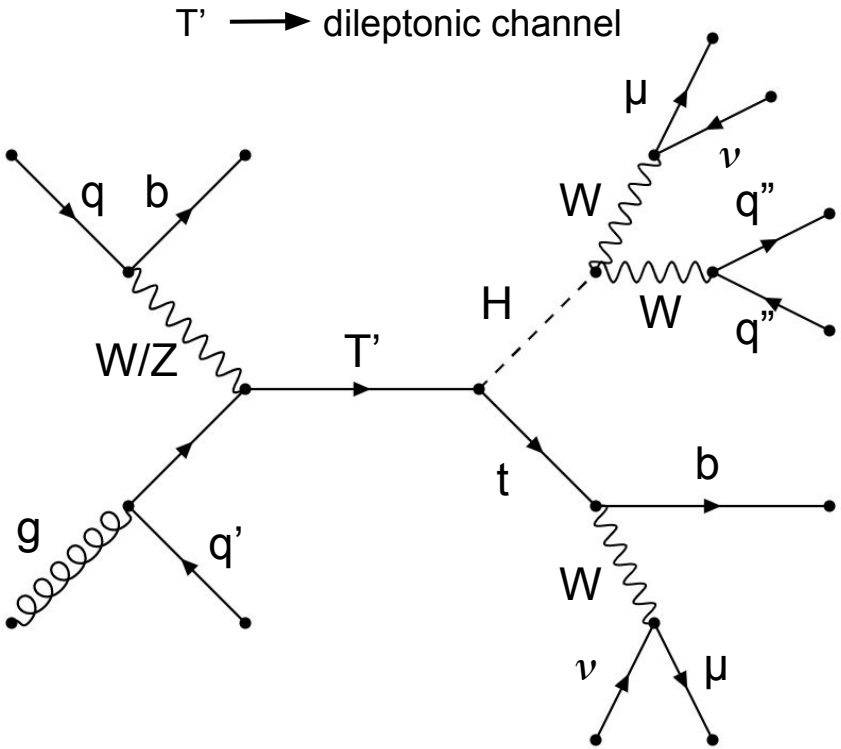


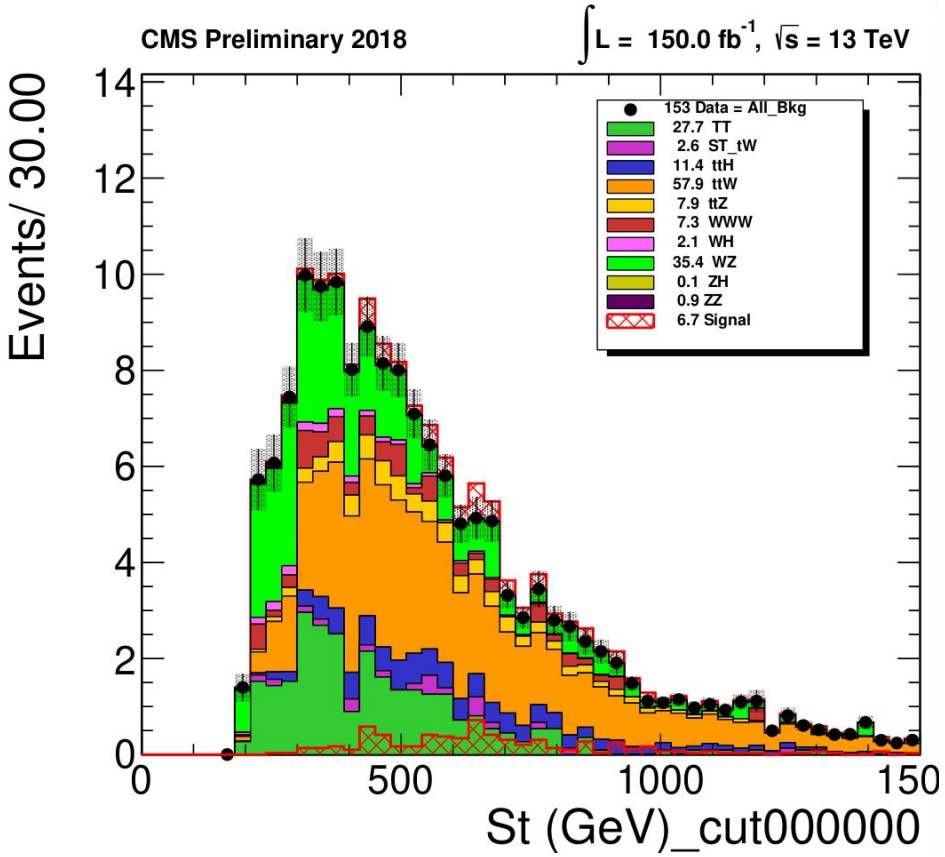
Basic selection: 2 loose Muons with Pt > 10 GeV, |η| < 2.4 and loose isolation + 2 tight SS Muons with Pt > 20 GeV, |η| < 2.4, tight isolation and sip_3d < 3.

Additional (and final!) cuts for the dimuonic channel:

Strategy 1: Cut 1: Pt of the leading muon > 80 GeV.
Cut 2: Pt of the subleading muon > 40 GeV.
Cut 3: $\Delta R > 1.8$.
Cut 4: at least one b-jet (b-tag loose) of Pt > 50 GeV.
Cut 5: Minimum of the invariant mass of the three jets with at least one b-jet > 34 GeV (Mass of the top +/- 2σ).

Strategy 2: Cut 1: Pt of the sum of the two muons > 160 GeV.
Cut 2: $\Delta R > 1.8$.
Cut 3: at least one b-jet (b-tag loose) of Pt > 50 GeV.
Cut 4: Minimum of the invariant mass of the three jets with a least one b-jet > 34 GeV (Mass of the top +/- 2σ).

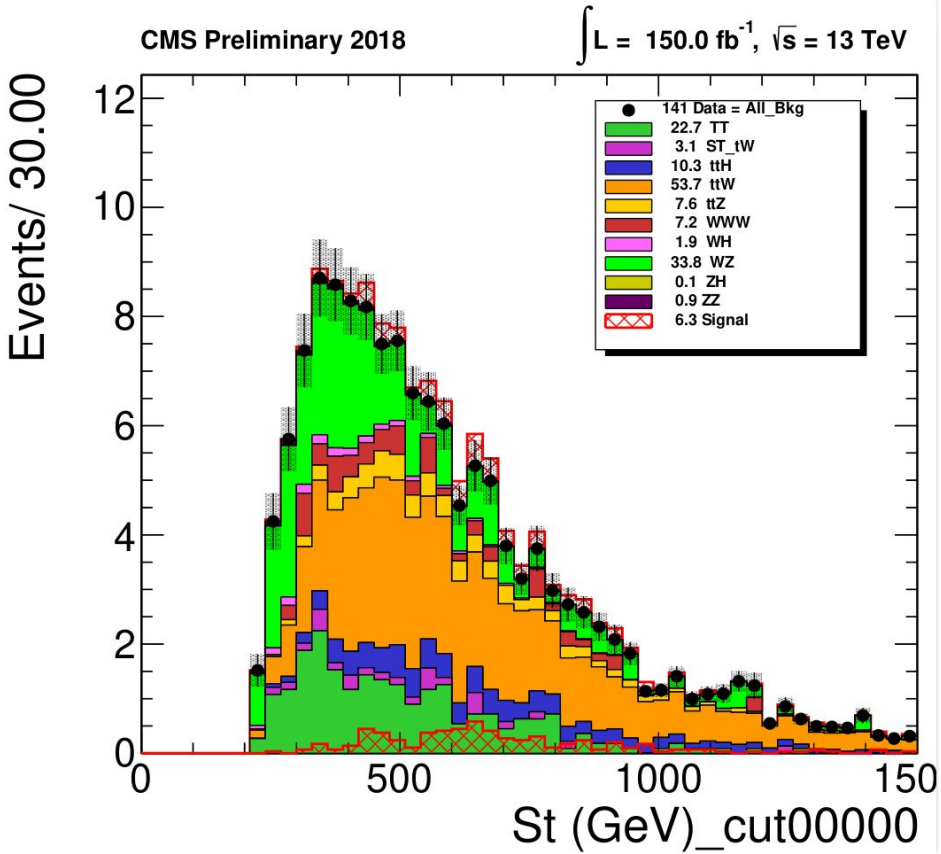
Strategy 1: St after Cut 5 (separated background)



I still need to find a new variable to identify the signal!

Selection	Signal	All Background	S/B
Basic selection	18.1	10263.2	0.18%
Cut 5: Invariant mass of the three jets	6.7	153.3	4.37%

Strategy 2: St after Cut 4 (separated background)



Same conclusion.

Selection	Signal	All Background	S/B
Basic selection	18.1	10263.2	0.18%
Cut 4: Invariant mass of the three jets	6.3	141.3	4.45%