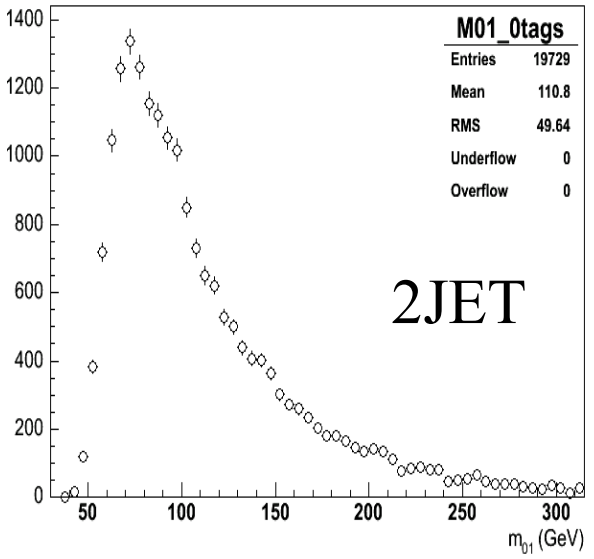
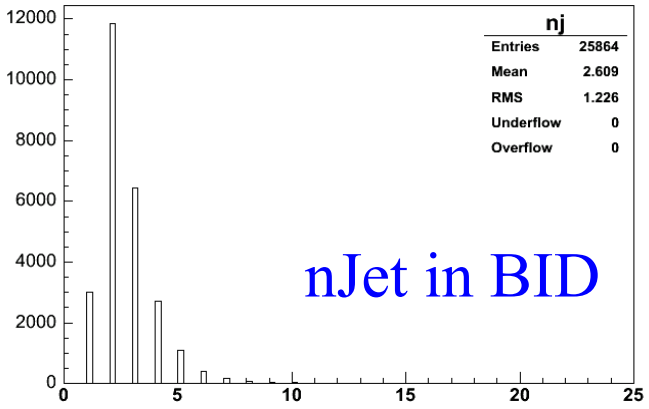
Z->bb Skim Overview

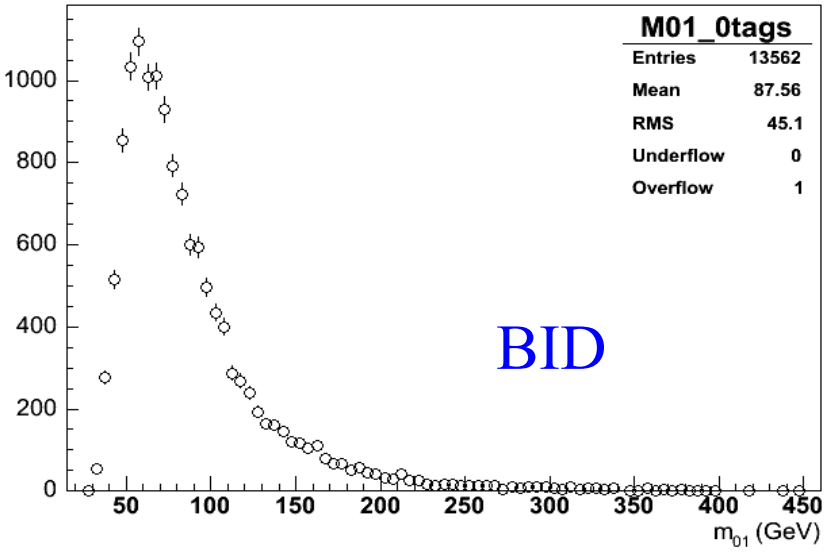
- Problem(s):
  - BID skim is 14/89 TB of skims in p17 tests
    - 1 JCCB jet (no pt cut!) matched to loose mu of pT>4 within dR<0.7
  - Only need medium mu for BID tests
    - But need all possible di-jet data for Z->bb
  - The BID skim might get included into the "inclusive muon" skim
    - Would take ~1 month to run over the 1B+ events with 40 jobs !
- Solution:
  - We should have our own Z->bb skim: "2JET"
    - Exactly 2 JCCB jets in |eta|<2.5 with pt>15 GeV (uncorrected)
    - Could apply d(phi) cut, but doesn't buy us too much
      - The 3rd-jet veto does most of the work
    - Not too much overlap with other skims, zero overlap with 3JET

Skim Size / Inv. Mass

- Study run 190086, p14.06.00 TMB
  - 350000 events, taken at ~25e30
  - 20000 events pass the 2JET cuts
  - 26000 events pass the BID cuts
- Only half of the BID events have enough jets to calculate inv. mass
  - Inv. mass for di-jet events is ~10 GeV lower in the BID events

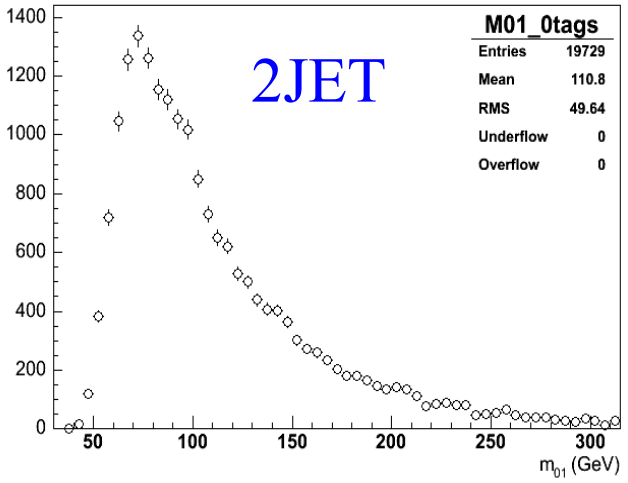


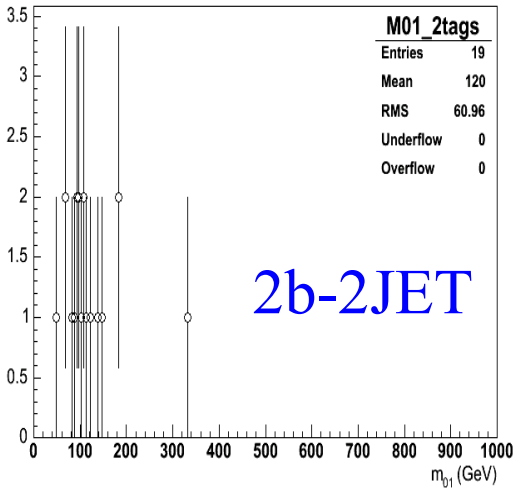


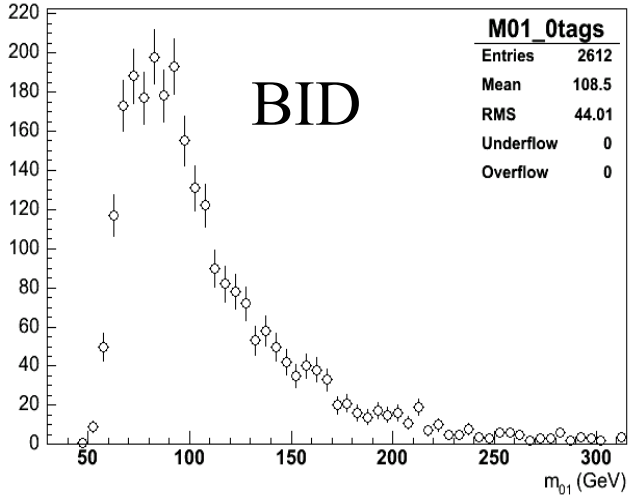


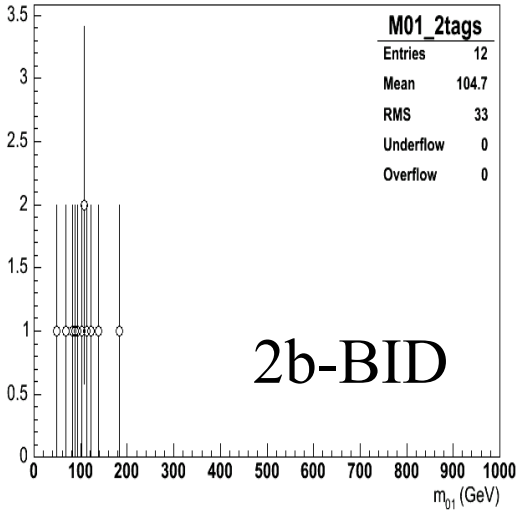
Physics Gain

- How many more 2b events will we get if we use 2JET ?
  - Before b-tagging: require 2 jets, pt>15, |eta|<2.5
    - 20000 2JET events
    - 2000 BID events
  - Require two b-tags:
    - 19 2JET events
    - 12 BID events
- So, statistics are low, but you get about 50% more Z->bb events



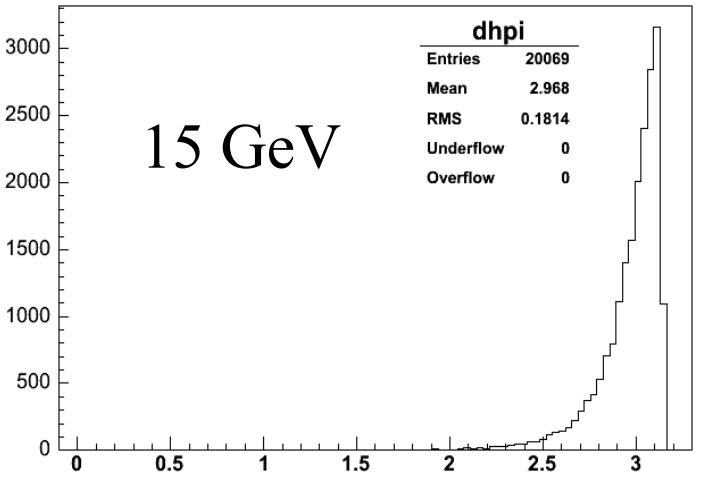






Other Cuts

- Cutting on d(phi) of the jets doesn't buy you too much space...



- Lowering the jet pt cut to 10 GeV increases the skim size by 50%
  - We don't really trust those those pt jets anyways yet, do we?
  - The low pt jets never get b-tagged