Benchmark Mass Spectrum

\[ M(\text{gluino}) = 649.78 \text{ GeV} \]
\[ M(\text{squarkL}) = 650.52 \text{ GeV} \]
\[ M(\text{sbottom1}) = 520.46 \text{ GeV} \]
\[ M(\text{stop1}) = 338.55 \text{ GeV} \]
\[ M(\text{neutralino2}) = 338.21 \text{ GeV} \]
\[ M(\text{stau1}) = 315.08 \text{ GeV} \]
\[ M(\text{neutralino1}) = 286.21 \text{ GeV} \]

Total cross section = 24760 fb

\[ \alpha = 4.5 \]
\[ \tan \beta = 30. \]
\[ m_{3/2} = 14000. \text{ GeV} \]
\[ n_M = 0. \]
\[ n_H = 0.5 \]

Luminosity = 400 fb^{-1}
bW-end vs M(sbottom1)

40 GeV / Bin

20 GeV / Bin

30 GeV / Bin
Experiment simulation: benchmark

End = 313.2 ± 1.1 GeV

End = 325.7 ± 1.6 GeV

End = 339.2 ± 2 GeV
16D63: $m_{Sbottom1} = 490.58$ GeV

End = 323 $\pm$ 2.2 GeV

Counts / 40 GeV

Counts / 30 GeV

Counts / 20 GeV

Counts / 1 GeV

$M_{bW}$, same-event

$M_{bW}$, bi-event

$M_{bW}$, subtracted
16D40: $m_{Sbottom1} = 504.79$ GeV

$E_n = 331.7 \pm 0.71$ GeV

$E_n = 332.2 \pm 0.95$ GeV

$E_n = 327.4 \pm 0.67$ GeV
16A60: $m_{\text{Sbottom1}} = 530.11$ GeV

End = $320.2 \pm 2.1$ GeV

End = $321 \pm 1.3$ GeV

End = $305.6 \pm 1.1$ GeV
17D24: \( m_{\text{Stop1}} = 314.99 \) GeV

Counts / 40 GeV

Counts / 30 GeV

Counts / 20 GeV

Counts / 1 GeV

End = 312.9 \( \pm \) 1.1 GeV

End = 306.7 \( \pm \) 0.61 GeV

End = 313.5 \( \pm \) 0.59 GeV

End = \( M_{jj} \) (GeV)
17D12: $m_{\text{Stop1}} = 326.96$ GeV

End = $352.8 \pm 1.4$ GeV

End = $361.4 \pm 2.1$ GeV

End = $336.3 \pm 1.1$ GeV
17A13: \( m_{\text{Stop1}} = 350.70 \text{ GeV} \)

Counts / 40 GeV

\[ M_{bW} \text{ (GeV)} \]

End = \( 329.1 \pm 0.76 \text{ GeV} \)

Counts / 30 GeV

\[ M_{bW} \text{ (GeV)} \]

End = \( 314.3 \pm 0.17 \text{ GeV} \)

Counts / 20 GeV

\[ M_{bW} \text{ (GeV)} \]

End = \( 313 \pm 0.48 \text{ GeV} \)
17A26: \( \text{mStop1} = 362.41 \text{ GeV} \)

- \( M_{bW, \text{same-event}} \)
- \( M_{bW, \text{bi-event}} \)
- \( M_{bW, \text{subtracted}} \)

**Counts / 40 GeV**

- \( M_{bW} \) (GeV)

End = 312.5 ± 1.2 GeV

**Counts / 30 GeV**

- \( M_{bW} \) (GeV)

End = 305.5 ± 2 GeV

**Counts / 20 GeV**

- \( M_{bW} \) (GeV)

End = 304.9 ± 1.9 GeV
01D40: \( m_{\text{Gluino}} = 609.78 \text{ GeV} \)
01D20: mGluino = 629.78 GeV

Counts / 40 GeV

$M_{bW}$, same-event
$M_{bW}$, bi-event
$M_{bW}$, subtracted

End = 303.7 $\pm$ 0.63 GeV

Counts / 30 GeV

$M_{bW}$, same-event
$M_{bW}$, bi-event
$M_{bW}$, subtracted

End = 318.1 $\pm$ 0.91 GeV

Counts / 20 GeV

$M_{bW}$, same-event
$M_{bW}$, bi-event
$M_{bW}$, subtracted

End = 290 $\pm$ 1.2 GeV

Counts / 1 GeV

$M_{jj}$, same-event
$M_{jj}$, bi-event
$M_{jj}$, subtracted

Counts / 1 GeV

$M_{jj}$, subtracted

$M_{jj}$ (GeV)
01A20: mGluino = 669.78 GeV

- $M_{bw}$, same-event
- $M_{bw}$, bi-event
- $M_{bw}$, subtracted

End = 355.7 ± 2.4 GeV

Counts / 40 GeV

Counts / 30 GeV

- $M_{bw}$, same-event
- $M_{bw}$, bi-event
- $M_{bw}$, subtracted

End = 353 ± 2 GeV

Counts / 20 GeV

Counts / 1 GeV

End = 338.2 ± 1.1 GeV

Counts / 20 GeV

Counts / 1 GeV

$M_{jj}$, same-event
$M_{jj}$, bi-event
$M_{jj}$, subtracted
01A40: $m_{Gluino} = 689.78 \text{ GeV}$