

MAD *Analysis* **5** The LaTeX report

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1 Setup

1.1 Command history

```
ma5>
ma5>import Events/run_04/tag_2_delphes_events.lhco.gz as sigzh
ma5>set sigzh.type=signal
ma5>set sigzh.xsection=0.001592
ma5>set main.lumi=1000
ma5>set main.normalize = lumi_weight
ma5>
ma5>set sigzh.linecolor = orange
ma5>set sigzh.linestyle = dashed
ma5>plot N(e+) 5 0 5
ma5>plot N(mu+) 5 0 5
ma5>plot N(mu-) 5 0 5
ma5>plot N(j) 5 0 5
ma5>plot N(b) 5 0 5
ma5>plot PT(j[1]) 500 0 500
ma5>plot PT(b[1]) 500 0 500
ma5>plot PT(b[2]) 500 0 500
ma5>plot DELTAR(mu+[1],mu-[1]) 100 -2 10
ma5>plot DELTAR(b[1],b[2]) 100 -2 10
ma5>plot PT(b[1]) 500 0 500
ma5>plot PT(j[2]) 500 0 500
ma5>
ma5>submit SS_ee2zh2mumubb_lhcocheck
```

1.2 Configuration

- MadAnalysis version 1.9.32 (2021/07/16).
- Histograms given for an integrated luminosity of 1000.0fb^{-1} .

2 Datasets

2.1 sigzh

- Sample consisting of: [signal](#) events.
- Generated events: [10000](#) events.
- Cross section imposed by the user: [0.001592](#) pb.
- Normalization to the luminosity: [1592+/- 0](#) events.
- Ratio (event weight): [0.16](#) .

| Path to the event file | Nr. of events | Cross section (pb) | Negative wgts (%) |
|---|---------------|--------------------|-------------------|
| Events/run_04/- tag_2_delphes_events.lhco.gz | 10000 | 0.001592 | 0.0 |

3 Histos and cuts

3.1 Histogram 1

* Plot: $N (e+)$

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|--------|---------|-------------|------------|
| sigzh | 1592 | 1.0 | 0.0058 | 0.07594 | 0.0 | 0.0 |

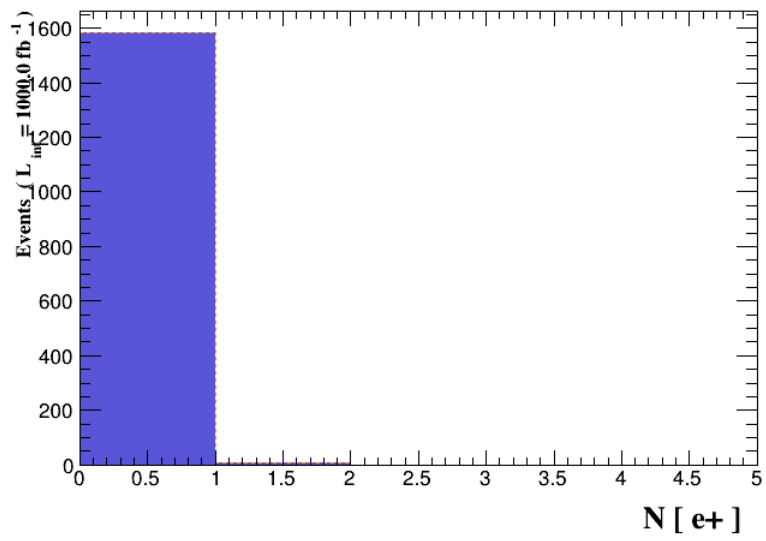


Figure 1.

3.2 Histogram 2

* Plot: N (mu+)

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|-------|--------|-------------|------------|
| sigzh | 1592 | 1.0 | 0.965 | 0.2083 | 0.0 | 0.0 |

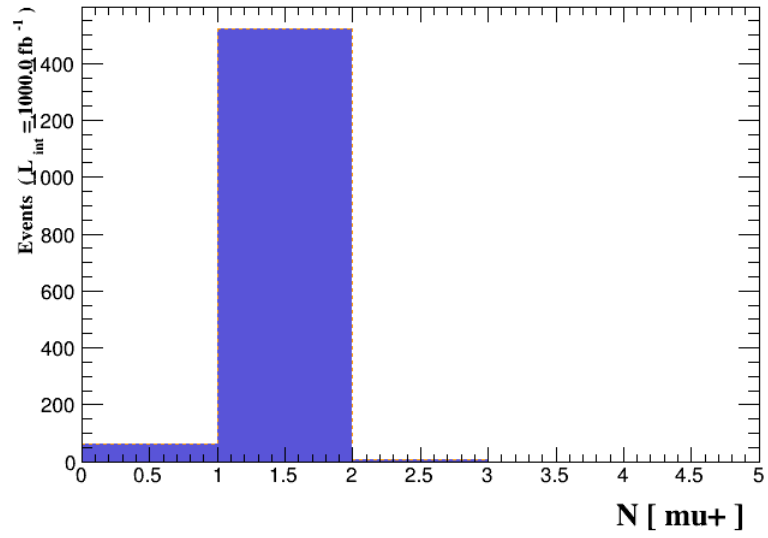


Figure 2.

3.3 Histogram 3

* Plot: N (mu-)

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|--------|--------|-------------|------------|
| sigzh | 1592 | 1.0 | 0.9667 | 0.2088 | 0.0 | 0.0 |

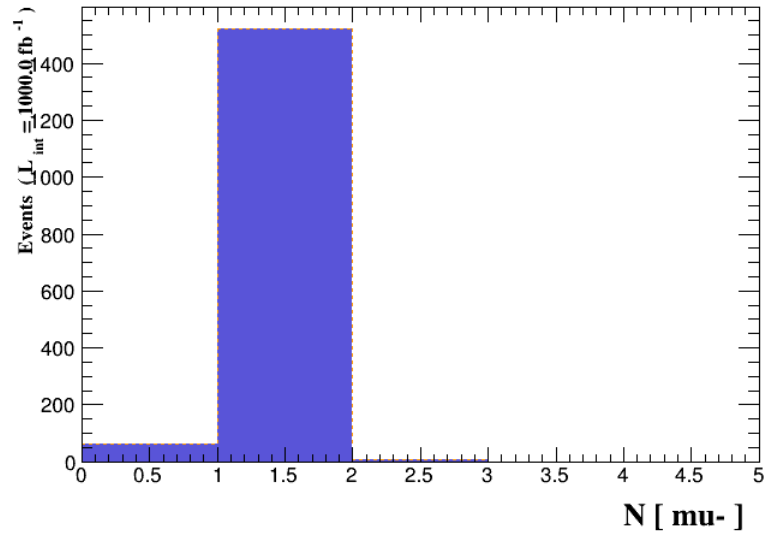


Figure 3.

3.4 Histogram 4

* Plot: $N(j)$

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|-------|--------|-------------|------------|
| sigzh | 1592 | 1.0 | 1.624 | 0.6456 | 0.0 | 0.0 |

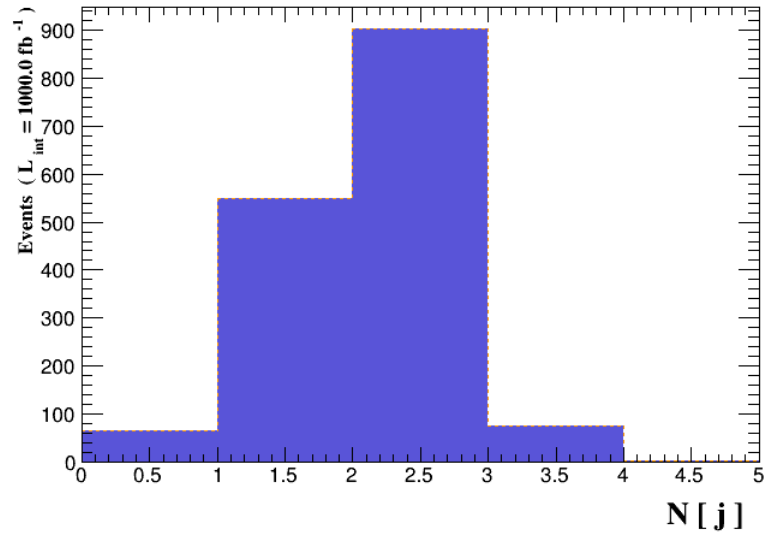


Figure 4.

3.5 Histogram 5

* Plot: N (b)

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|--------|--------|-------------|------------|
| sigzh | 1592 | 1.0 | 1.0722 | 0.7211 | 0.0 | 0.0 |

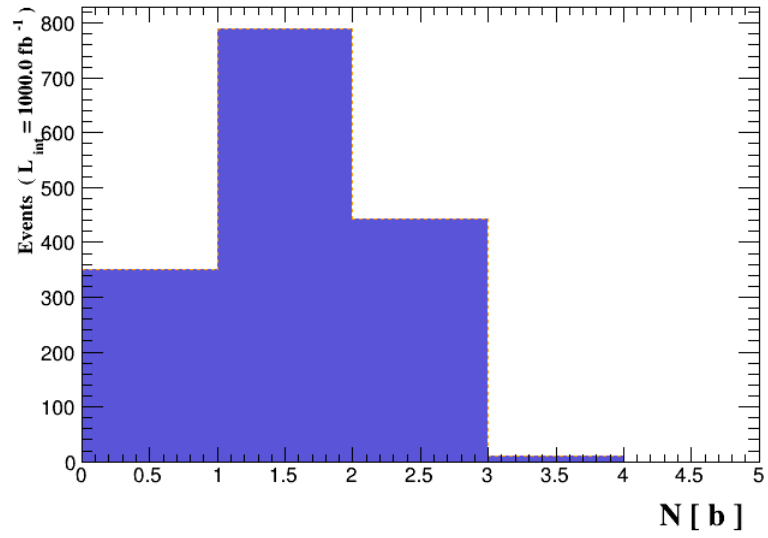


Figure 5.

3.6 Histogram 6

* Plot: PT (j[1])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|---------|-------|-------------|------------|
| sigzh | 1527 | 1.0 | 137.311 | 48.12 | 0.0 | 0.0 |

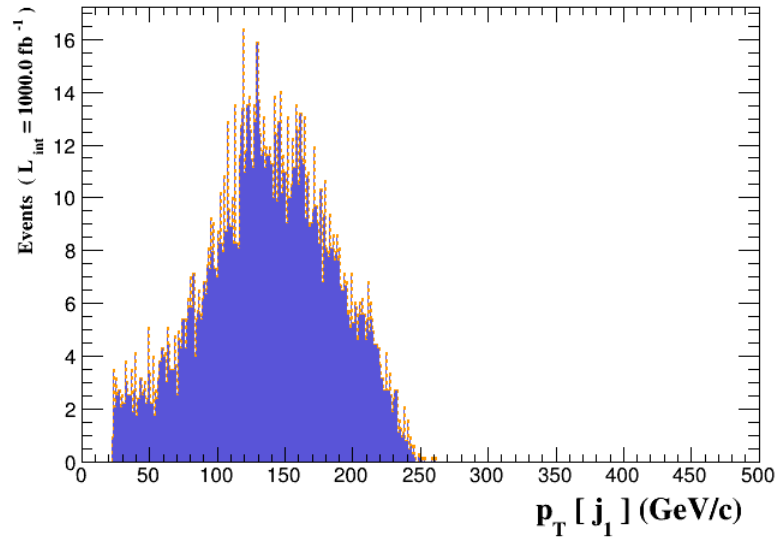


Figure 6.

3.7 Histogram 7

* Plot: PT (b[1])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|---------|-------|-------------|------------|
| sigzh | 1242 | 1.0 | 124.576 | 53.41 | 0.0 | 0.0 |

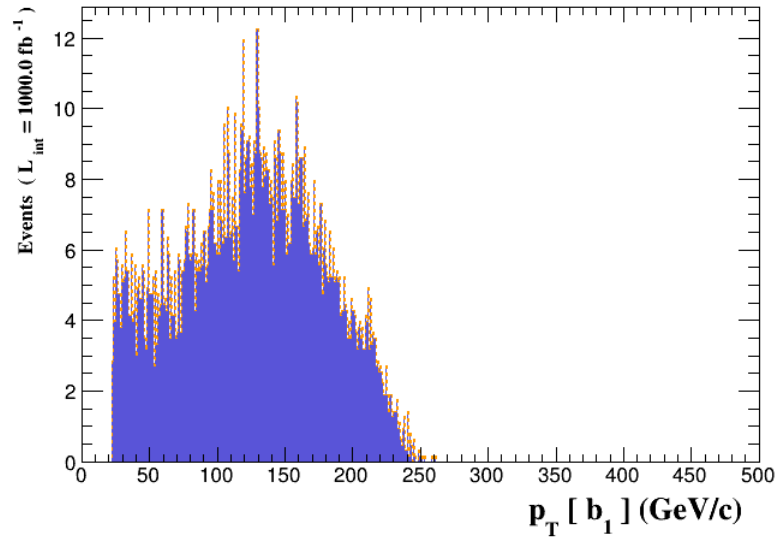


Figure 7.

3.8 Histogram 8

* Plot: PT (b[2])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|--------|-------|-------------|------------|
| sigzh | 453 | 1.0 | 60.675 | 25.63 | 0.0 | 0.0 |

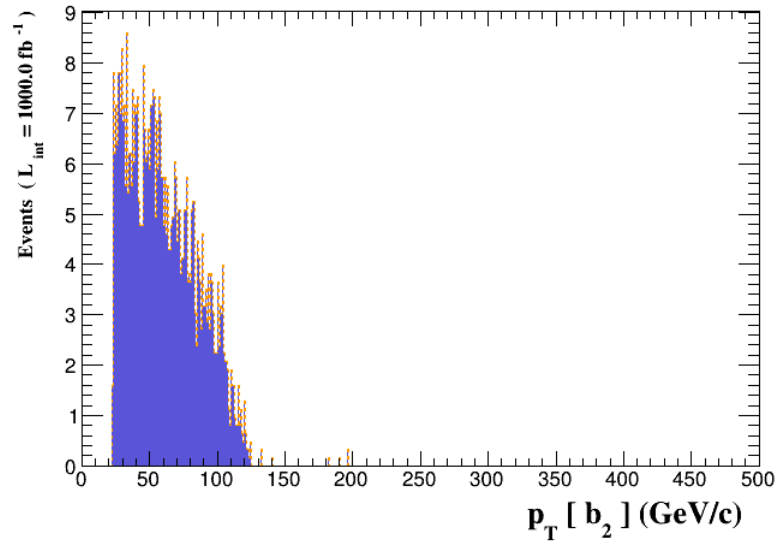


Figure 8.

3.9 Histogram 9

* Plot: DELTAR (mu+[1] , mu-[1])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|---------|--------|-------------|------------|
| sigzh | 1469 | 1.0 | 1.14743 | 0.4504 | 0.0 | 0.0 |

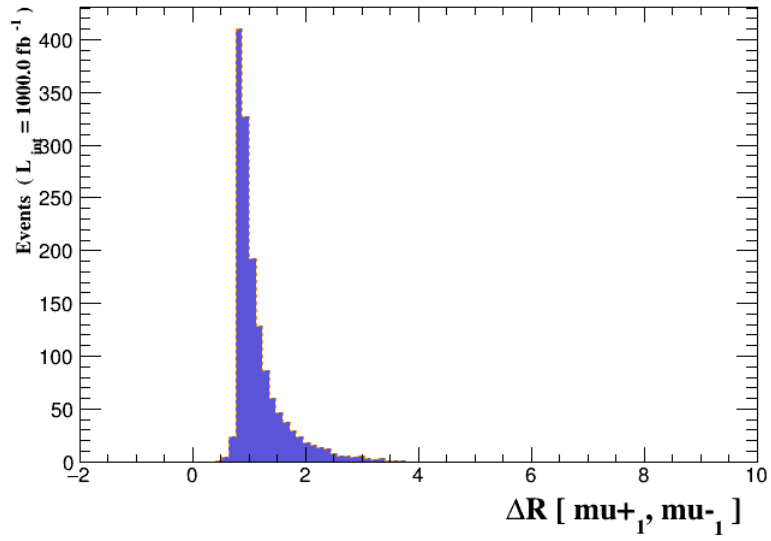


Figure 9.

3.10 Histogram 10

* Plot: DELTAR (b[1] , b[2])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|---------|--------|-------------|------------|
| sigzh | 453 | 1.0 | 1.31422 | 0.4294 | 0.0 | 0.0 |

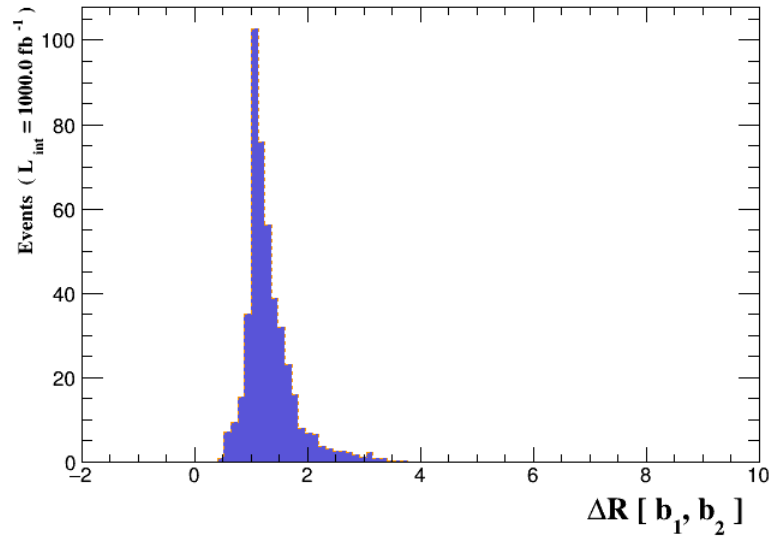


Figure 10.

3.11 Histogram 11

* Plot: PT (b[1])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|---------|-------|-------------|------------|
| sigzh | 1242 | 1.0 | 124.576 | 53.41 | 0.0 | 0.0 |

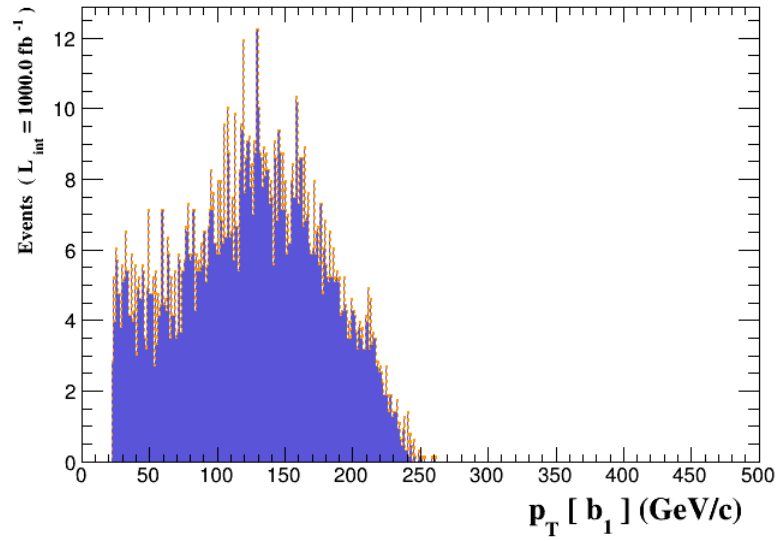


Figure 11.

3.12 Histogram 12

* Plot: PT (j[2])

| Dataset | Integral | Entries per event | Mean | RMS | % underflow | % overflow |
|---------|----------|-------------------|---------|-------|-------------|------------|
| sigzh | 979 | 1.0 | 61.1986 | 26.36 | 0.0 | 0.0 |

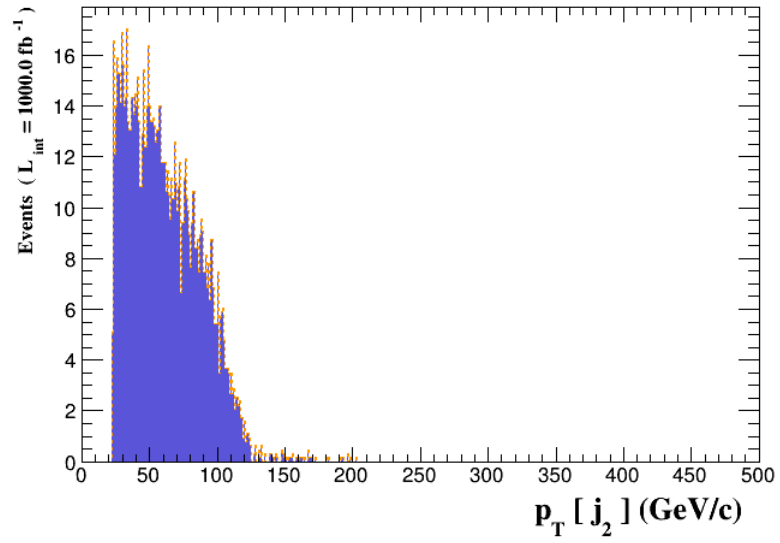


Figure 12.