Table 1: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $2 \leq n_{\text{jet}} \leq 3$ and $n_{\text{b}}^{\text{reco}} = 0$ for the signal region and data control samples with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $6235^{+100}_{-67}$ | $2900^{+60}_{-54}$ | $1955^{+34}_{-39}$ | $558^{+14}_{-15}$ | $186^{+11}_{-10}$ | $51.3^{+3.4}_{-3.8}$ | $21.2^{+2.3}_{-2.2}$ | $16.1^{+1.7}_{-1.7}$ |
| Data hadronic | 6232 | 2904 | 1965 | 552 | 177 | 58 | 16 | 25 |
| SM $\mu$+jets | $9696^{+102}_{-83}$ | $5044^{+69}_{-81}$ | $4655^{+57}_{-73}$ | $1806^{+43}_{-34}$ | $766^{+27}_{-24}$ | $307^{+14}_{-16}$ | $147^{+10}_{-11}$ | $195^{+13}_{-13}$ |
| Data $\mu$+jets | 9698 | 5039 | 4653 | 1808 | 779 | 294 | 150 | 193 |
| SM $\mu\mu$+jets | $1334^{+28}_{-37}$ | $707^{+26}_{-27}$ | $594^{+18}_{-22}$ | $238^{+10}_{-10}$ | $116^{+9}_{-10}$ | $46.2^{+3.8}_{-4.8}$ | $22.4^{+3.0}_{-2.7}$ | $28.6^{+4.3}_{-4.0}$ |
| Data $\mu\mu$+jets | 1336 | 708 | 623 | 205 | 120 | 44 | 21 | 26 |
| SM $\gamma$+jets | – | – | $2637^{+48}_{-42}$ | $818^{+24}_{-20}$ | $261^{+16}_{-15}$ | $85.1^{+5.3}_{-5.7}$ | $31.3^{+4.0}_{-4.0}$ | $25.4^{+3.3}_{-3.4}$ |
| Data $\gamma$+jets | – | – | 2601 | 854 | 252 | 94 | 35 | 21 |

Table 2: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $2 \leq n_{\text{jet}} \leq 3$ and $n_{\text{b}}^{\text{reco}} = 1$ for the signal region and data control samples with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $1162^{+37}_{-29}$ | $481^{+18}_{-19}$ | $341^{+15}_{-16}$ | $86.7^{+4.2}_{-5.6}$ | $24.8^{+2.8}_{-2.7}$ | $7.2^{+1.1}_{-1.0}$ | $3.3^{+0.7}_{-0.7}$ | $2.1^{+0.5}_{-0.5}$ |
| Data hadronic | 1164 | 473 | 329 | 95 | 23 | 8 | 4 | 1 |
| SM $\mu$+jets | $2665^{+40}_{-56}$ | $1428^{+37}_{-41}$ | $1206^{+36}_{-34}$ | $428^{+17}_{-20}$ | $154^{+10}_{-11}$ | $50.9^{+6.1}_{-6.5}$ | $26.8^{+4.0}_{-4.5}$ | $24.8^{+4.3}_{-4.8}$ |
| Data $\mu$+jets | 2662 | 1434 | 1223 | 413 | 154 | 51 | 27 | 26 |
| SM $\mu\mu$+jets | $183^{+11}_{-14}$ | $97.4^{+7.5}_{-6.3}$ | $103^{+9}_{-8}$ | $41.0^{+3.0}_{-3.7}$ | $17.2^{+2.7}_{-2.4}$ | $5.7^{+1.0}_{-1.0}$ | $2.9^{+0.7}_{-0.7}$ | $4.3^{+1.2}_{-1.3}$ |
| Data $\mu\mu$+jets | 184 | 99 | 102 | 42 | 18 | 6 | 2 | 5 |
| SM $\gamma$+jets | – | – | $311^{+14}_{-17}$ | $95.0^{+5.1}_{-6.6}$ | $26.3^{+4.1}_{-3.7}$ | $10.2^{+1.7}_{-1.6}$ | $5.1^{+1.2}_{-1.2}$ | $3.8^{+1.0}_{-1.1}$ |
| Data $\gamma$+jets | – | – | 307 | 101 | 27 | 9 | 5 | 3 |

Table 3: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $2 \leq n_{\text{jet}} \leq 3$ and $n_{\text{b}}^{\text{reco}} = 2$ for the signal region and $\mu$ + jets control sample with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $224^{+15}_{-14}$ | $98.2^{+8.4}_{-6.4}$ | $59.0^{+5.2}_{-6.0}$ | $12.8^{+1.6}_{-1.6}$ | $3.0^{+0.9}_{-0.7}$ | $0.5^{+0.2}_{-0.2}$ | $0.1^{+0.1}_{-0.1}$ | $0.1^{+0.1}_{-0.1}$ |
| Data hadronic | 222 | 107 | 58 | 12 | 5 | 1 | 0 | 0 |
| SM $\mu$+jets | $874^{+25}_{-33}$ | $459^{+19}_{-21}$ | $402^{+21}_{-19}$ | $119^{+12}_{-10}$ | $32.9^{+6.6}_{-5.0}$ | $7.5^{+3.1}_{-2.8}$ | $2.9^{+1.9}_{-1.9}$ | $3.9^{+2.0}_{-2.0}$ |
| Data $\mu$+jets | 876 | 451 | 403 | 120 | 31 | 7 | 3 | 4 |

Table 4: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $n_{\text{jet}} \geq 4$ and $n_{\text{b}}^{\text{reco}} = 0$ for the signal region and data control samples with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $1010^{+34}_{-24}$ | $447^{+19}_{-16}$ | $390^{+19}_{-15}$ | $250^{+12}_{-11}$ | $111^{+9}_{-7}$ | $53.3^{+4.3}_{-4.3}$ | $18.5^{+2.4}_{-2.4}$ | $19.4^{+2.5}_{-2.7}$ |
| Data hadronic | 1009 | 452 | 375 | 274 | 113 | 56 | 16 | 27 |
| SM $\mu$+jets | $1386^{+37}_{-38}$ | $642^{+20}_{-28}$ | $611^{+22}_{-18}$ | $475^{+21}_{-17}$ | $267^{+17}_{-13}$ | $144^{+11}_{-9}$ | $62.4^{+6.9}_{-5.4}$ | $87.1^{+8.3}_{-8.6}$ |
| Data $\mu$+jets | 1383 | 644 | 636 | 444 | 260 | 147 | 59 | 88 |
| SM $\mu\mu$+jets | $122^{+9}_{-10}$ | $53.1^{+4.2}_{-4.3}$ | $63.1^{+6.1}_{-5.2}$ | $49.3^{+4.1}_{-4.4}$ | $27.3^{+3.8}_{-3.2}$ | $16.6^{+2.2}_{-1.9}$ | $5.6^{+1.2}_{-1.2}$ | $12.7^{+2.4}_{-2.9}$ |
| Data $\mu\mu$+jets | 126 | 46 | 55 | 56 | 32 | 11 | 7 | 8 |
| SM $\gamma$+jets | – | – | $309^{+15}_{-14}$ | $213^{+11}_{-12}$ | $99.7^{+8.2}_{-8.4}$ | $50.4^{+4.5}_{-5.0}$ | $19.5^{+3.5}_{-2.9}$ | $20.8^{+3.0}_{-3.6}$ |
| Data $\gamma$+jets | – | – | 308 | 213 | 99 | 50 | 24 | 17 |

Table 5: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $n_{\text{jet}} \geq 4$ and $n_{\text{b}}^{\text{reco}} = 1$ for the signal region and data control samples with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $521^{+25}_{-17}$ | $232^{+15}_{-12}$ | $188^{+12}_{-11}$ | $106^{+6}_{-6}$ | $42.1^{+4.1}_{-4.4}$ | $17.9^{+2.2}_{-2.0}$ | $9.8^{+1.5}_{-1.4}$ | $6.8^{+1.2}_{-1.1}$ |
| Data hadronic | 515 | 236 | 204 | 92 | 51 | 13 | 13 | 6 |
| SM $\mu$+jets | $1367^{+39}_{-37}$ | $615^{+24}_{-24}$ | $605^{+26}_{-21}$ | $433^{+20}_{-21}$ | $209^{+14}_{-13}$ | $104^{+10}_{-9}$ | $61.7^{+7.0}_{-6.9}$ | $44.5^{+6.5}_{-6.2}$ |
| Data $\mu$+jets | 1373 | 612 | 592 | 444 | 203 | 108 | 55 | 48 |
| SM $\mu\mu$+jets | $30.4^{+3.9}_{-5.4}$ | $15.3^{+2.0}_{-2.4}$ | $19.9^{+2.7}_{-2.4}$ | $16.7^{+2.5}_{-2.2}$ | $10.5^{+1.5}_{-1.9}$ | $4.5^{+0.8}_{-0.9}$ | $2.1^{+0.5}_{-0.6}$ | $4.6^{+1.2}_{-1.3}$ |
| Data $\mu\mu$+jets | 31 | 14 | 21 | 15 | 11 | 3 | 2 | 4 |
| SM $\gamma$+jets | – | – | $60.2^{+5.6}_{-5.2}$ | $40.1^{+3.7}_{-3.9}$ | $19.1^{+2.5}_{-3.3}$ | $9.9^{+1.4}_{-1.8}$ | $6.3^{+1.4}_{-1.4}$ | $5.1^{+1.3}_{-1.2}$ |
| Data $\gamma$+jets | – | – | 57 | 45 | 16 | 12 | 10 | 3 |

Table 6: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $n_{\text{jet}} \geq 4$ and $n_{\text{b}}^{\text{reco}} = 2$ for the signal region and $\mu$ + jets control sample with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $208^{+17}_{-9}$ | $103^{+9}_{-7}$ | $85.9^{+7.2}_{-6.9}$ | $51.7^{+4.6}_{-4.7}$ | $19.9^{+3.4}_{-3.0}$ | $6.8^{+1.2}_{-1.3}$ | $1.7^{+0.7}_{-0.4}$ | $1.3^{+0.4}_{-0.3}$ |
| Data hadronic | 204 | 107 | 84 | 59 | 24 | 5 | 1 | 2 |
| SM $\mu$+jets | $819^{+26}_{-33}$ | $419^{+18}_{-20}$ | $386^{+19}_{-19}$ | $278^{+16}_{-15}$ | $150^{+13}_{-10}$ | $64.2^{+7.0}_{-7.4}$ | $24.3^{+5.3}_{-4.7}$ | $17.7^{+3.8}_{-3.9}$ |
| Data $\mu$+jets | 823 | 415 | 388 | 271 | 146 | 66 | 25 | 17 |

Table 7: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $n_{\text{jet}} \geq 4$ and $n_{\text{b}}^{\text{reco}} = 3$ for the signal region and $\mu$ + jets control sample with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–475 | 475–575 | 575–675 | 675–775 | 775–875 | 875–$\infty$ |
|---|---|---|---|---|---|---|---|---|
| SM hadronic | $25.3^{+5.0}_{-4.2}$ | $11.7^{+1.7}_{-1.8}$ | $6.7^{+1.4}_{-1.2}$ | $3.9^{+0.8}_{-0.8}$ | $2.3^{+0.6}_{-0.6}$ | $1.2^{+0.3}_{-0.4}$ | $0.3^{+0.2}_{-0.1}$ | $0.1^{+0.1}_{-0.1}$ |
| Data hadronic | 25 | 13 | 4 | 2 | 2 | 3 | 0 | 0 |
| SM $\mu$+jets | $83.8^{+8.7}_{-8.6}$ | $49.2^{+6.4}_{-7.0}$ | $45.3^{+6.4}_{-6.0}$ | $29.1^{+4.8}_{-5.2}$ | $17.7^{+4.0}_{-3.7}$ | $12.8^{+3.0}_{-3.7}$ | $5.6^{+2.7}_{-1.9}$ | $1.9^{+1.8}_{-1.0}$ |
| Data $\mu$+jets | 84 | 48 | 48 | 31 | 18 | 11 | 6 | 2 |

Table 8: CMS preliminary 2012, $L_{\text{int}} = 11.7\ \text{fb}^{-1}$, $\sqrt{s} = 8\,\text{TeV}$. Comparison of the observed yields in the different $H_{\text{T}}$ bins when requiring $n_{\text{jet}} \geq 4$ and $n_{\text{b}}^{\text{reco}} \geq 4$ for the signal region and $\mu$ + jets control sample with the SM expectations and combined statistical and systematic uncertainties given by the simultaneous fit.

| $H_{\text{T}}$ Bin (GeV) | 275–325 | 325–375 | 375–$\infty$ |
|---|---|---|---|
| SM hadronic | $0.9^{+0.4}_{-0.7}$ | $0.3^{+0.2}_{-0.2}$ | $0.6^{+0.3}_{-0.3}$ |
| Data hadronic | 1 | 0 | 2 |
| SM $\mu$+jets | $1.0^{+1.0}_{-1.0}$ | $0.8^{+0.8}_{-0.8}$ | $4.4^{+2.3}_{-1.8}$ |
| Data $\mu$+jets | 1 | 1 | 3 |