| State | $p_{\mathrm{T}}[\mathrm{GeV}$ | $N_{\text {ch }}$ | $\lambda_{\vartheta}$ | $\lambda_{\varphi}$ | $\lambda_{\vartheta \varphi}$ | $\tilde{\lambda}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Y(1S) | 10-15 | 0-10 | $+0.014_{-0.110}^{+0.102}$ | $-0.044_{-0.029}^{+0.026}$ | $+0.053_{-0.036}^{+0.033}$ | $-0.094_{-0.138}^{+0.126}$ |
|  |  | 10-20 | $+0.103_{-0.098}^{+0.089}$ | $-0.035_{-0.027}^{+0.025}$ | +0.027 ${ }_{-0.031}^{+0.028}$ | $+0.005_{-0.139}^{+0.126}$ |
|  |  | 20-30 | $+0.187_{-0.110}^{+0.102}$ | $-0.041_{-0.029}^{+0.026}$ | $+0.035_{-0.037}^{+0.033}$ | $+0.066_{-0.145}^{+0.128}$ |
|  |  | 30-40 | $+0.032_{-0.132}^{+0.121}$ | $-0.042_{-0.031}^{+0.027}$ | $+0.033_{-0.044}^{+0.039}$ | $-0.074_{-0.159}^{+0.146}$ |
|  |  | 40-60 | $-0.073_{-0.174}^{+0.159}$ | $-0.074_{-0.037}^{+0.034}$ | $+0.061_{-0.059}^{+0.054}$ | $-0.243_{-0.201}^{+0.186}$ |
| $\mathrm{Y}(2 \mathrm{~S})$ | 10-15 | 0-10 | $+0.232_{-0.156}^{+0.140}$ | $-0.018_{-0.037}^{+0.035}$ | $-0.048_{-0.054}^{+0.049}$ | $+0.166_{-0.183}^{+0.174}$ |
|  |  | 10-20 | $+0.214_{-0.136}^{+0.126}$ | $-0.047_{-0.035}^{+0.032}$ | $-0.055_{-0.048}^{+0.042}$ | $+0.075_{-0.178}^{+0.158}$ |
|  |  | 20-30 | $+0.230_{-0.171}^{+0.158}$ | $-0.028_{-0.040}^{+0.036}$ | $-0.045_{-0.061}^{+0.057}$ | $+0.137_{-0.222}^{+0.201}$ |
|  |  | 30-40 | $+0.267_{-0.226}^{+0.213}$ | $-0.024_{-0.046}^{+0.044}$ | $-0.059_{-0.084}^{+0.072}$ | $+0.183_{-0.284}^{+0.272}$ |
|  |  | 40-60 | $+0.317_{-0.325}^{+0.289}$ | $-0.061_{-0.063}^{+0.055}$ | $+0.023_{-0.113}^{+0.103}$ | $+0.128_{-0.366}^{+0.345}$ |
| Y(3S) | 10-15 | 0-10 | $+0.074_{-0.187}^{+0.169}$ | $-0.028_{-0.044}^{+0.038}$ | $-0.044_{-0.069}^{+0.061}$ | $-0.002_{-0.219}^{+0.205}$ |
|  |  | 10-20 | $+0.279_{-0.173}^{+0.156}$ | $-0.019_{-0.040}^{+0.037}$ | $-0.148_{-0.064}^{+0.060}$ | $+0.208_{-0.223}^{+0.209}$ |
|  |  | 20-30 | $+0.061_{-0.213}^{+0.194}$ | $-0.032_{-0.047}^{+0.043}$ | $+0.061-0.078$ | $-0.023_{-0.259}^{+0.245}$ |
|  |  | 30-60 | $+0.672_{-0.304}^{+0.285}$ | $+0.051_{-0.068}^{+0.061}$ | $-0.196_{-0.116}^{+0.108}$ | $+0.798_{-0.479}^{+0.435}$ |
|  |  | global unc. | $\pm 0.085$ | $\pm 0.023$ | $\pm 0.022$ | $\pm 0.104$ |
| Y(1S) | 15-35 | 0-10 | $-0.002_{-0.110}^{+0.102}$ | $-0.054_{-0.032}^{+0.029}$ | $+0.020_{-0.041}^{+0.038}$ | $-0.142_{-0.138}^{+0.128}$ |
|  |  | 10-20 | $-0.004_{-0.094}^{+0.087}$ | $-0.047_{-0.041}^{+0.037}$ | $-0.000_{-0.038}^{+0.033}$ | $-0.127_{-0.142}^{+0.130}$ |
|  |  | 20-30 | $+0.053_{-0.093}^{+0.087}$ | $-0.054_{-0.042}^{+0.039}$ | $-0.005_{-0.037}^{+0.034}$ | $-0.095_{-0.130}^{+0.121}$ |
|  |  | 30-40 | $+0.036_{-0.105}^{+0.097}$ | $-0.026_{-0.036}^{+0.033}$ | $-0.000_{-0.042}^{+0.037}$ | $-0.037_{-0.139}^{+0.128}$ |
|  |  | 40-60 | $-0.021_{-0.112}^{+0.106}$ | $-0.049_{-0.044}^{+0.039}$ | $+0.007_{-0.046}^{+0.043}$ | $-0.148_{-0.164}^{+0.151}$ |
| $\mathrm{Y}(2 \mathrm{~S})$ | 15-35 | 0-10 | $+0.124_{-0.168}^{+0.163}$ | $-0.058_{-0.039}^{+0.034}$ | $-0.050_{-0.054}^{+0.048}$ | $-0.039_{-0.190}^{+0.189}$ |
|  |  | 10-20 | $+0.237_{-0.114}^{+0.105}$ | $-0.027_{-0.032}^{+0.028}$ | $-0.025_{-0.043}^{+0.039}$ | $+0.149_{-0.148}^{+0.138}$ |
|  |  | 20-30 | $+0.205_{-0.113}^{+0.104}$ | $-0.086_{-0.034}^{+0.030}$ | $+0.052_{-0.043}^{+0.038}$ | $-0.040_{-0.146}^{+0.141}$ |
|  |  | 30-40 | $+0.501_{-0.153}^{+0.147}$ | $-0.020_{-0.037}^{+0.033}$ | $-0.078_{-0.053}^{+0.047}$ | $+0.416_{-0.184}^{+0.177}$ |
|  |  | 40-60 | $+0.364_{-0.172}^{+0.171}$ | $-0.061_{-0.044}^{+0.040}$ | $-0.024_{-0.061}^{+0.053}$ | $+0.169_{-0.206}^{+0.200}$ |
| $\mathrm{Y}(3 \mathrm{~S})$ | 15-35 | 0-10 | $+0.381_{-0.193}^{+0.188}$ | $-0.074_{-0.044}^{+0.039}$ | $+0.048_{-0.066}^{+0.059}$ | $+0.144_{-0.203}^{+0.210}$ |
|  |  | 10-20 | $+0.244_{-0.134}^{+0.121}$ | $-0.029_{-0.037}^{+0.033}$ | $-0.035_{-0.048}^{+0.041}$ | $+0.151_{-0.177}^{+0.169}$ |
|  |  | 20-30 | $+0.285_{-0.132}^{+0.121}$ | $-0.048_{-0.036}^{+0.032}$ | $-0.053_{-0.048}^{+0.041}$ | $+0.135_{-0.165}^{+0.162}$ |
|  |  | 30-40 | $+0.220_{-0.169}^{+0.163}$ | $-0.121_{-0.043}^{+0.039}$ | $-0.050_{-0.060}^{+0.054}$ | $-0.114_{-0.197}^{+0.191}$ |
|  |  | 40-60 | $+0.278_{-0.206}^{+0.218}$ | $-0.072_{-0.051}^{+0.048}$ | $-0.143_{-0.078}^{+0.068}$ | $+0.057_{-0.231}^{+0.246}$ |

State $p_{\mathrm{T}}[\mathrm{GeV}$
global unc.

