$Z_m(\mu = 2.000 \text{ GeV})$  $Z_m(am_q) = k_1 + k_2 am_q + k_3 (am_q)^2$ **C**1 F<sub>1</sub>M fit *p*-value:0.00 fit *p*-value:0.00 5.4  $-am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$ 3.4 - $--am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $- - am_q^* (M_{\eta_c}^* = PDG)$  $---am_q^* (M_{\eta_c}^* = PDG)$ 4.6 5.2 3.3 5.0 4.4 3.2 4.8 3.1 4.2 4.6 3.0 fit *p*-value:0.00 4.0  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$ 4.4  $---am_q^* (M_{\eta_c}^* = PDG)$ 2.9 -0.40 0.45 0.50 0.20 0.25 0.30 0.35 0.40 0.45 0.35 0.40 0.45 0.20 0.25 0.30 0.35 0.15 0.10 0.15 0.20 0.25 0.30  $am_q$ 

 $Z_m(\mu = 2.000 \text{ GeV})$  $Z_m(am_q) = k_1 + k_2 \log(am_q) + k_3 (am_q)^2$ **C**1 F<sub>1</sub>M 4.8 fit *p*-value:0.37 fit *p*-value:0.00  $am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$ 5.4 3.4 - $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $- - am_q^* (M_{\eta_c}^* = PDG)$  $---am_q^* (M_{\eta_c}^* = PDG)$ 4.6 5.2 3.3 · 5.0 4.4 3.2 4.8 3.1 4.2 4.6 3.0 · fit *p*-value:0.80 4.0  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$ 4.4  $---am_q^* (M_{\eta_c}^* = PDG)$ 2.9 -0.40 0.45 0.50 0.20 0.30 0.35 0.40 0.45 0.40 0.45 0.20 0.25 0.30 0.35 0.15 0.25 0.10 0.15 0.20 0.25 0.30 0.35

 $am_q$ 

 $Z_m(\mu = 2.000 \text{ GeV})$  $Z_m(am_q) = k_1 + k_2 am_q \log(am_q) + k_3 (am_q)^2$ **C**1 F<sub>1</sub>M 4.8 fit *p*-value:0.29 fit *p*-value:0.01  $am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$ 5.4 -3.4 - $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $- - am_q^* (M_{\eta_c}^* = PDG)$  $---am_q^* (M_{\eta_c}^* = PDG)$ 4.6 5.2 -3.3 -5.0 -4.4 3.2 4.8 3.1 -4.2 4.6 3.0 fit *p*-value:0.70 4.0  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$ 4.4  $---am_q^* (M_{\eta_c}^* = PDG)$ 2.9 -0.40 0.45 0.50 0.20 0.30 0.35 0.40 0.45 0.40 0.45 0.20 0.25 0.30 0.35 0.15 0.25 0.10 0.15 0.20 0.25 0.30 0.35  $am_q$ 

 $Z_m(\mu = 2.000 \text{ GeV})$  $Z_m(am_q) = k_1 + (am_q)^2 (k_2 + k_3 \log((am_q)^2))$ **C**1 F<sub>1</sub>M 5.4 fit *p*-value:0.00 fit *p*-value:0.00 4.7  $am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$ 3.4  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$ 4.6  $- - am_q^* (M_{\eta_c}^* = PDG)$  $---am_q^* (M_{\eta_c}^* = PDG)$ 5.2 3.3 -4.5 -5.0 4.4 3.2 -4.3 4.8 3.1 -4.2 4.1 4.6 3.0 fit *p*-value:0.00  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$ 4.0  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$ 4.4  $---am_q^* (M_{\eta_c}^* = PDG)$ 3.9 -2.9 -0.40 0.45 0.50 0.20 0.25 0.30 0.35 0.40 0.45 0.35 0.40 0.45 0.20 0.25 0.30 0.35 0.15 0.10 0.15 0.20 0.25 0.30  $am_q$ 

 $Z_m(\mu = 2.000 \text{ GeV})$  $Z_m(am_q) = k_1 + k_2/am_q + k_3/(am_q)^2$ **C**1 F<sub>1</sub>M 5.4 fit *p*-value:0.00 fit *p*-value:0.00  $am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$ 3.4 - $--am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $---am_q^* (M_{\eta_c}^* = 2.6 \text{ GeV})$  $- - am_q^* (M_{\eta_c}^* = PDG)$  $---am_q^* (M_{\eta_c}^* = PDG)$ 4.6 5.2 3.3 -5.0 4.4 3.2 -4.8 3.1 4.2 4.6 3.0 fit *p*-value:0.00 4.0  $---am_q^* (M_{\eta_c}^* = 2.4 \text{ GeV})$  $---am_q^*(M_{\eta_c}^*=2.6 \text{ GeV})$ 4.4  $---am_q^* (M_{\eta_c}^* = PDG)$ 2.9 -0.40 0.45 0.50 0.20 0.25 0.30 0.35 0.40 0.45 0.20 0.35 0.40 0.45 0.20 0.25 0.30 0.35 0.15 0.10 0.15 0.25 0.30  $am_q$