

F_π with σ_3

March 24, 2022

By measuring the pion mass with σ_1 , we had obtained the results of F_π shown in Table 1. Using σ_3 the results are slightly different and we show them in Table 2

| β | F_π variance | F_π chi-squared |
|---------|------------------|---------------------|
| 2 | 0.392(2) | 0.393(3) |
| 3 | 0.3923(8) | 0.3925(11) |
| 4 | 0.3937(9) | 0.393(1) |
| 5 | 0.3956(10) | 0.3962(13) |

Table 1: F_π obtained through a fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$. The pion mass was measured with σ_1

| β | F_π variance | F_π chi-squared |
|---------|------------------|---------------------|
| 2 | 0.3866(9) | 0.3867(9) |
| 3 | 0.3887(5) | 0.3887(7) |
| 4 | 0.3871(9) | 0.3877(11) |
| 5 | 0.3919(6) | 0.3923(6) |

Table 2: F_π obtained through a fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$. The pion mass was measured with σ_3

From figure 1 to 5 we show the pion mass, measured with σ_3 , as a function of $(m_{\text{pcac}}^2 g)^{1/3}$ for $\beta = 2, 3, 4$ and 5 and several lattices. We fitted a function of the form $\sqrt{a + bx^3}$ to the data.

In figure 6 we show the behavior of the residual pion mass as a function of $1/L$ for $\beta = 2, 3, 4$ and 5, together with a fit of the form a/L .

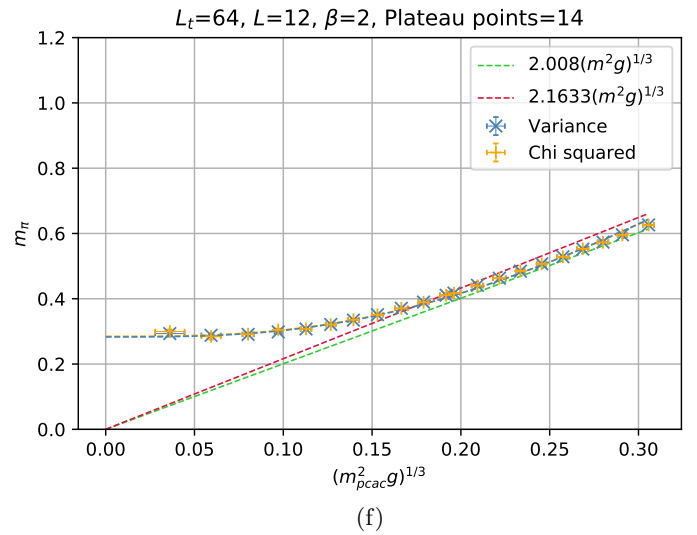
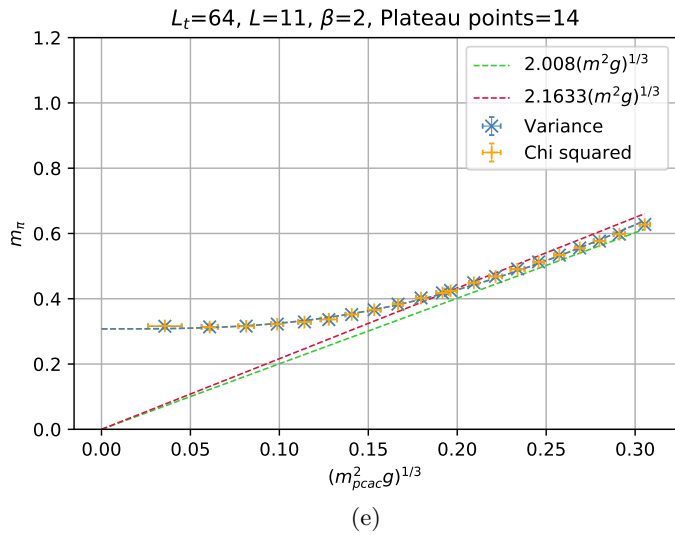
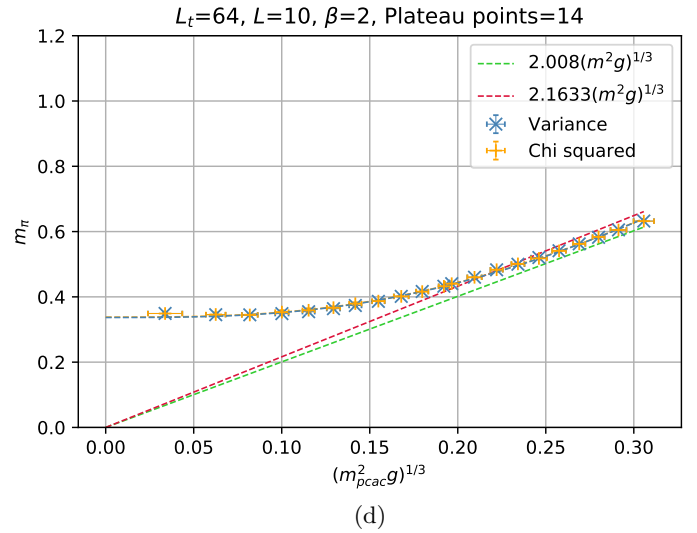
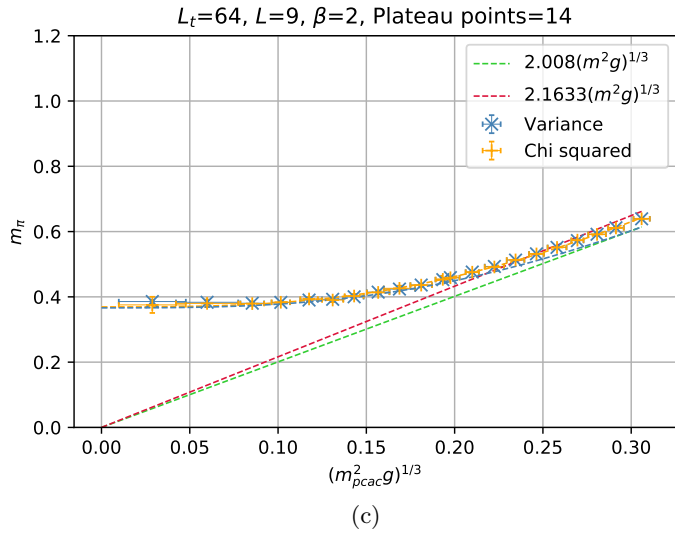
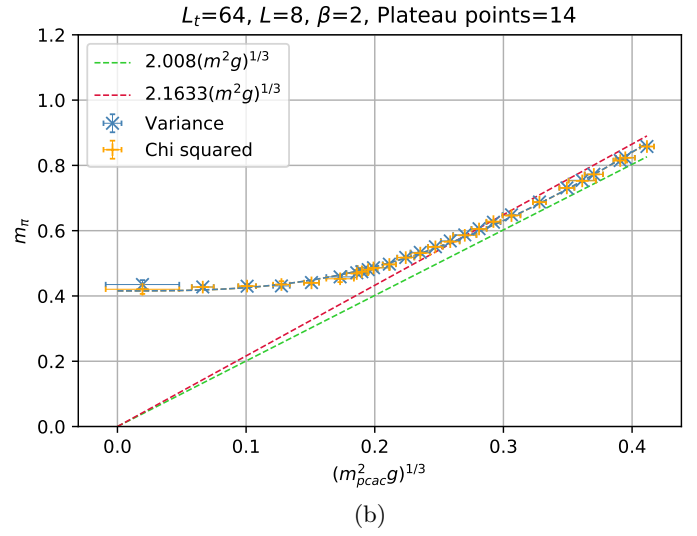
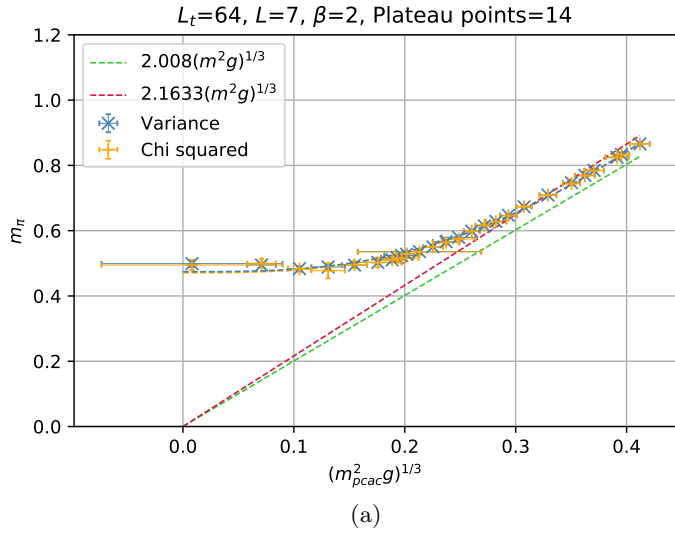


Figure 1: m_π vs. $(m_{pcac}^2 g)^{1/3}$ for $\beta = 2$. The pion mass was measured using σ_3 .

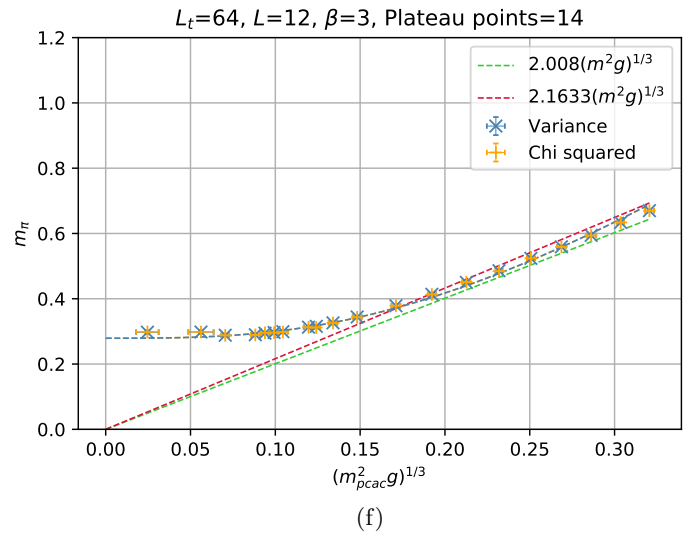
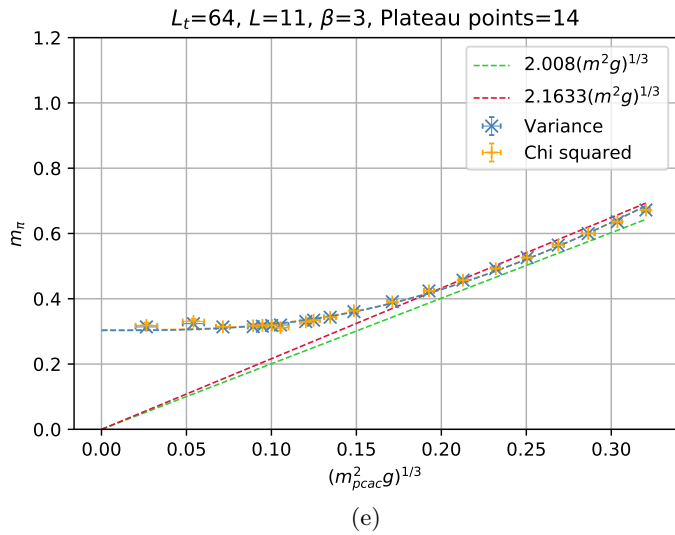
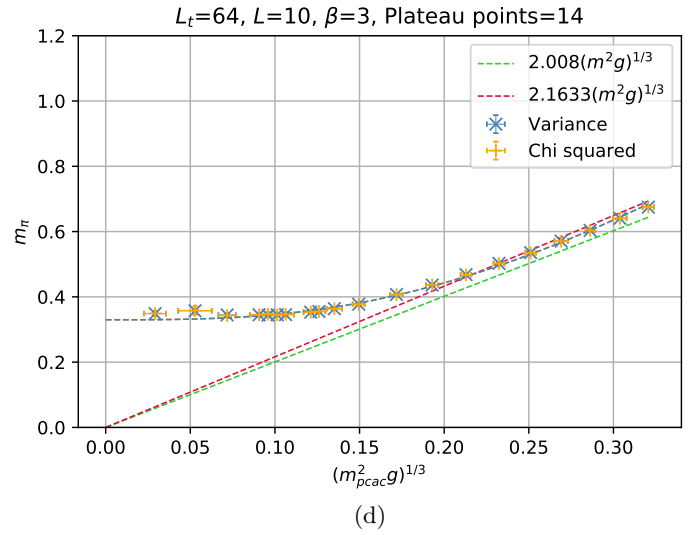
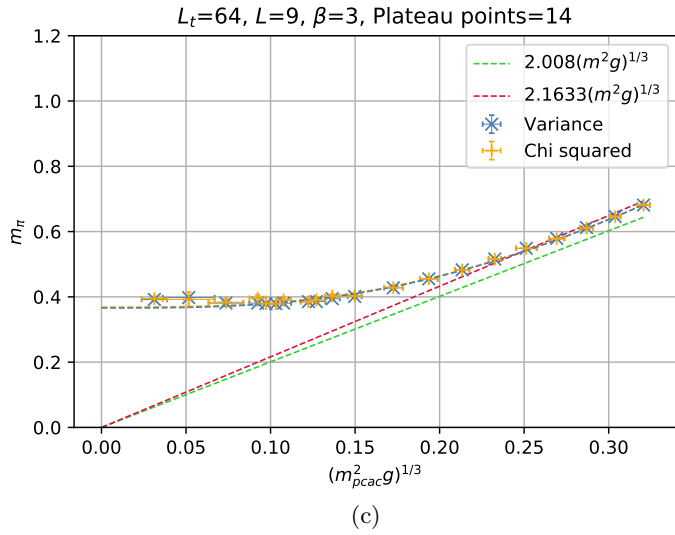
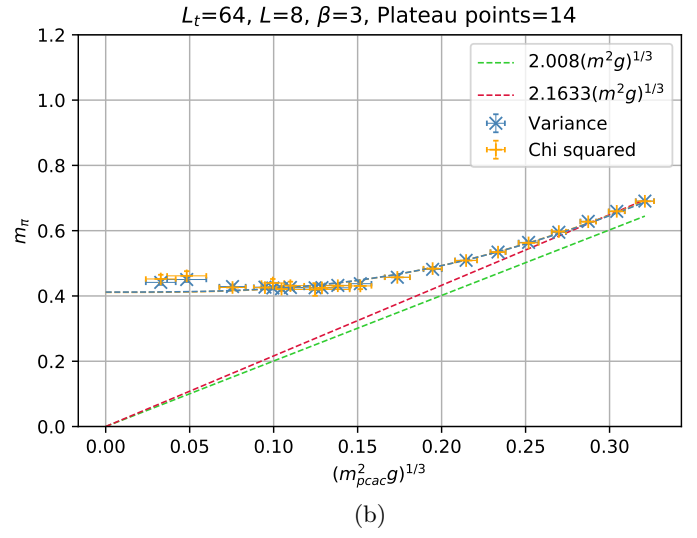
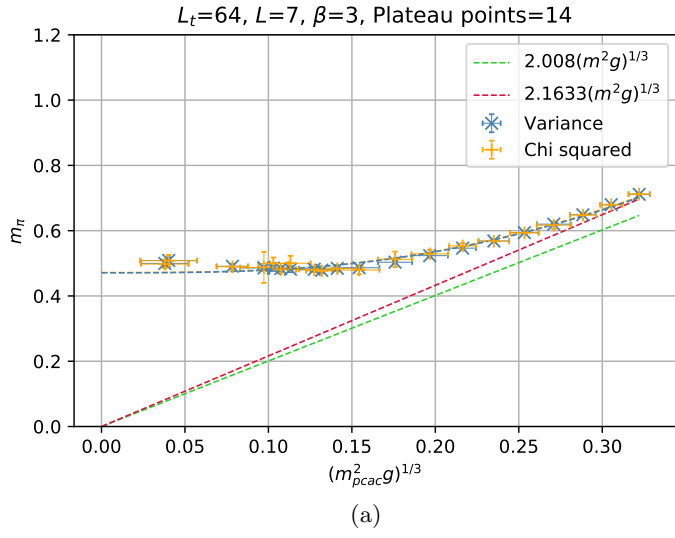


Figure 2: m_π vs. $(m_{pcac}^2 g)^{1/3}$ for $\beta = 3$. The pion mass was measured using σ_3 .

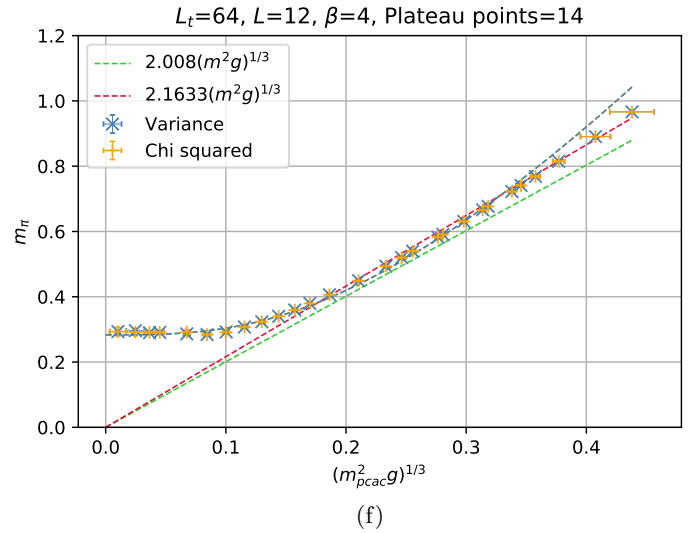
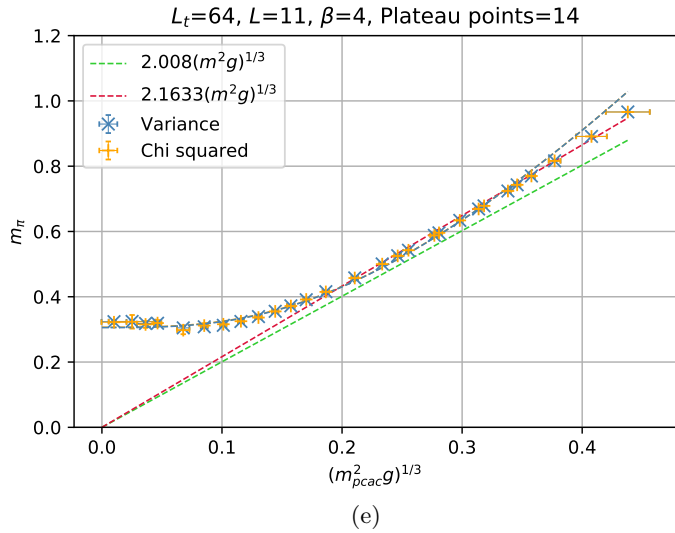
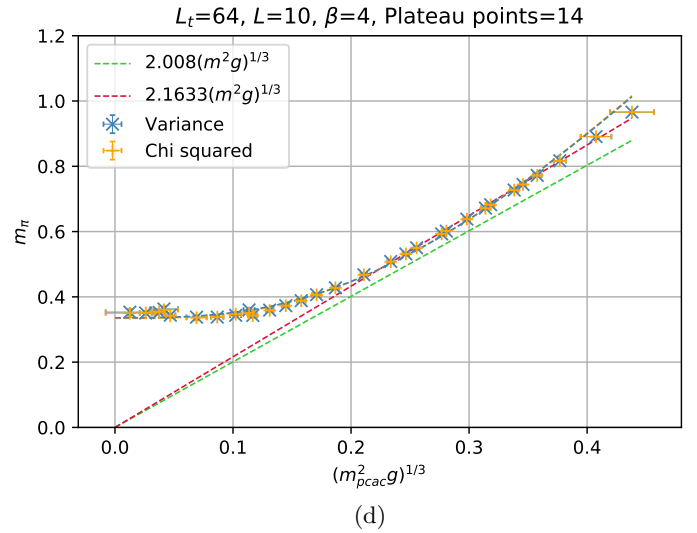
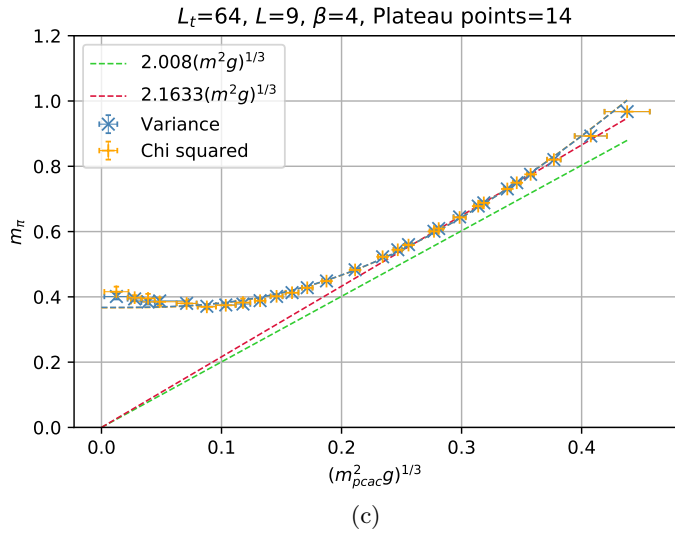
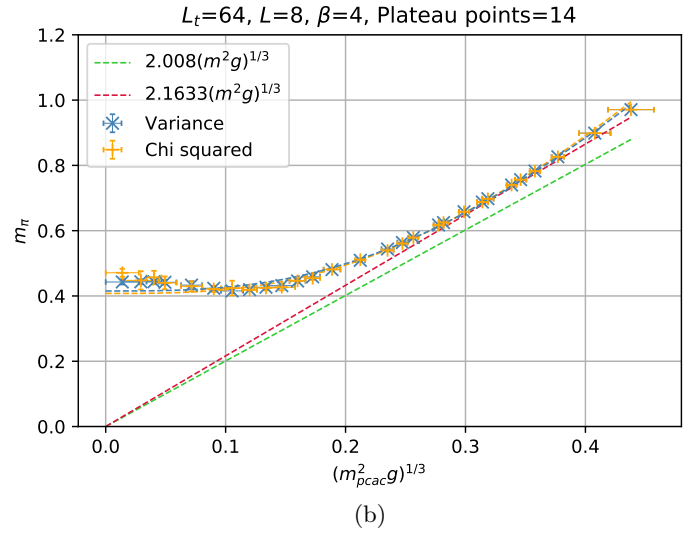
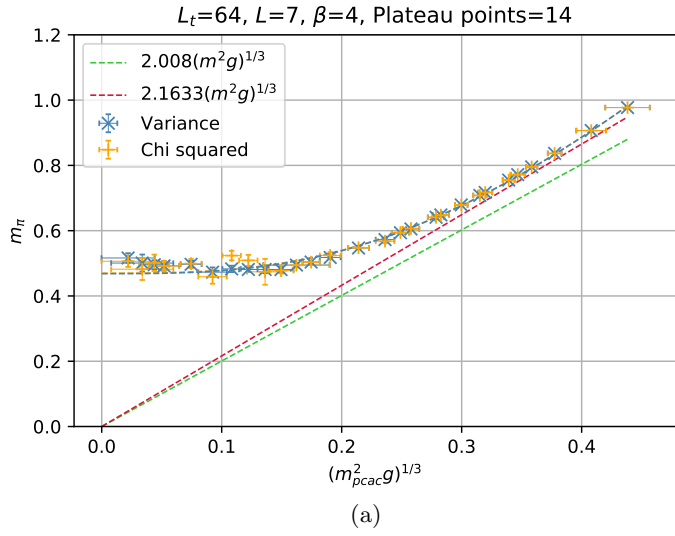


Figure 3: m_π vs. $(m_{pcac}^2 g)^{1/3}$ for $\beta = 4$. The pion mass was measured using σ_3 .

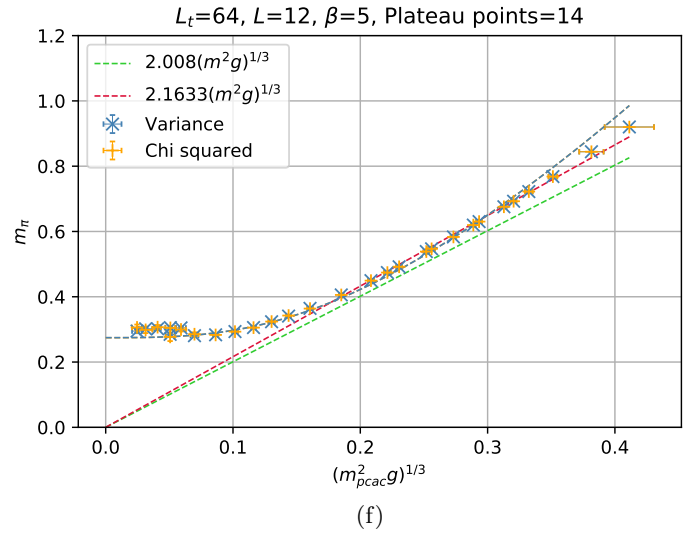
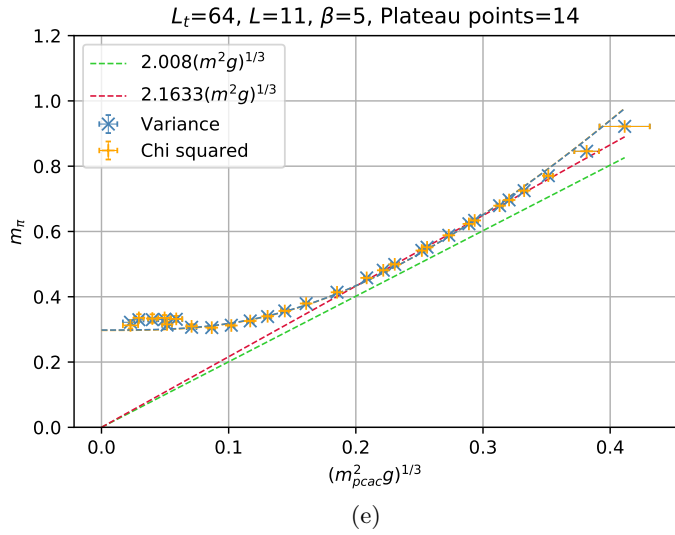
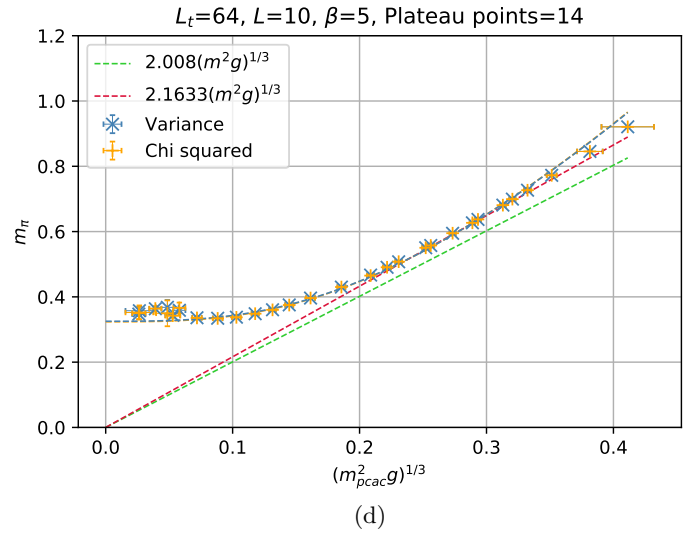
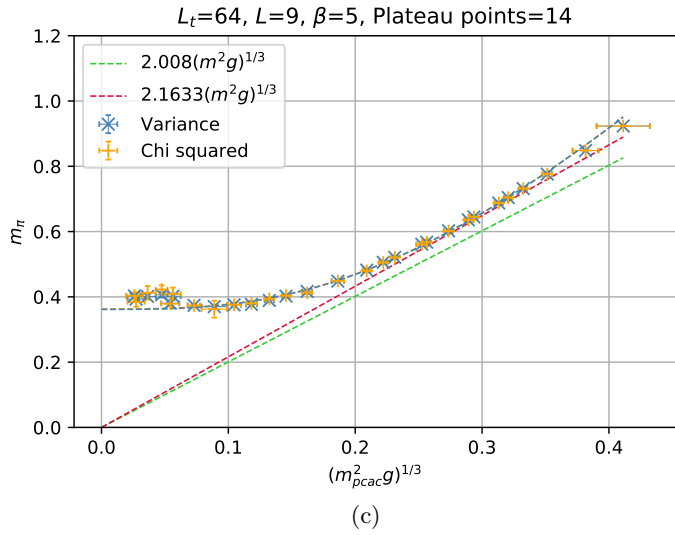
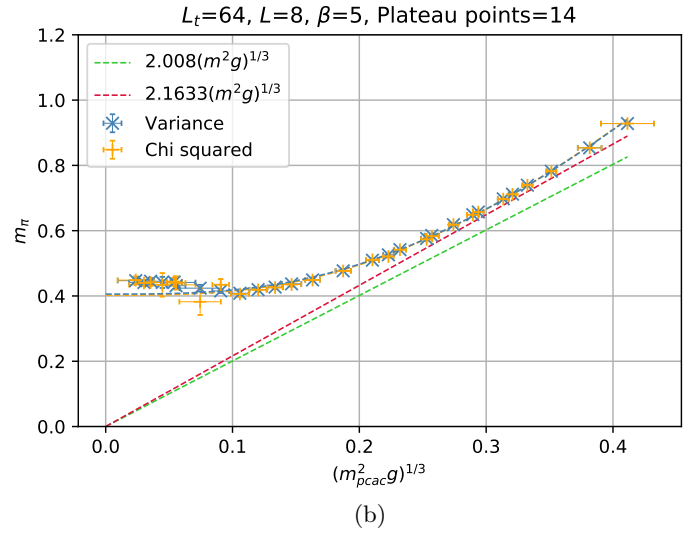
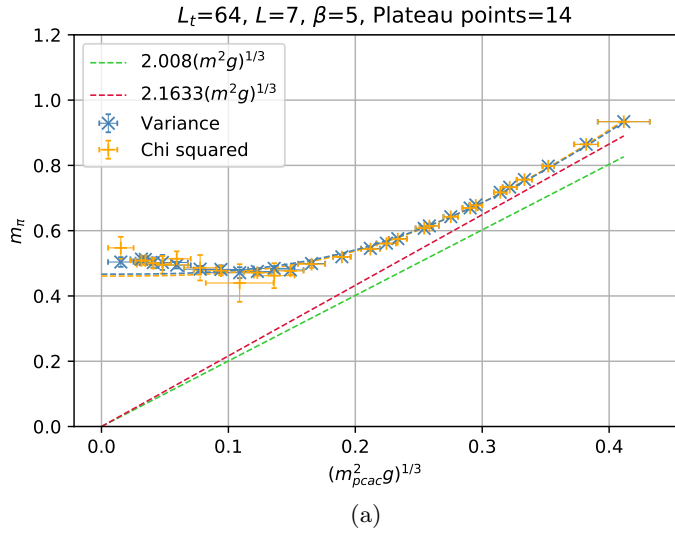
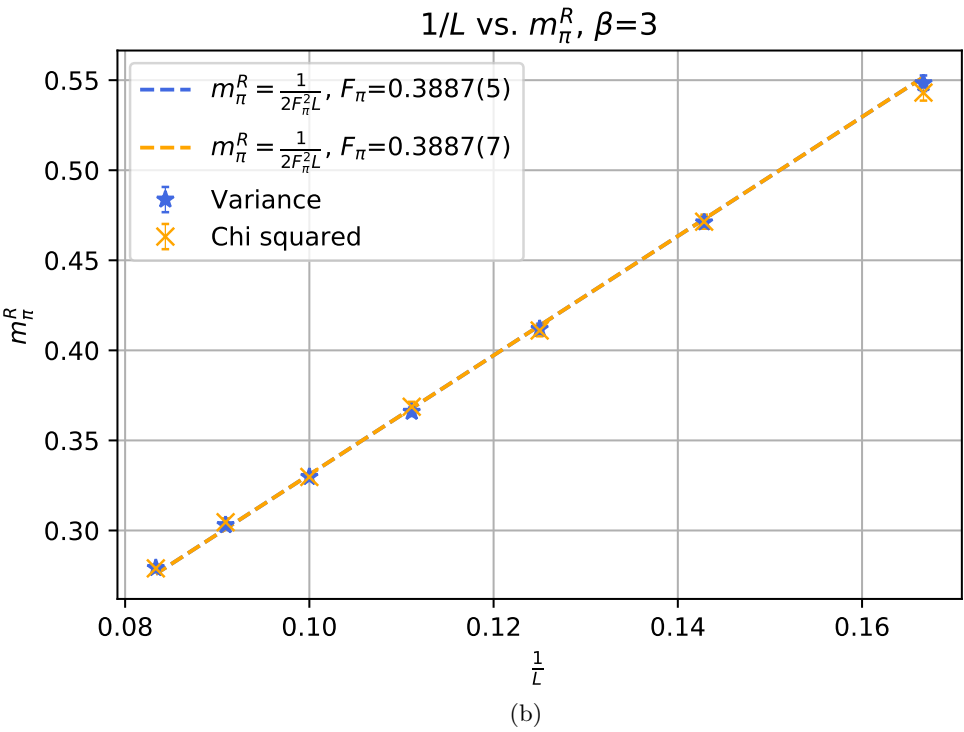
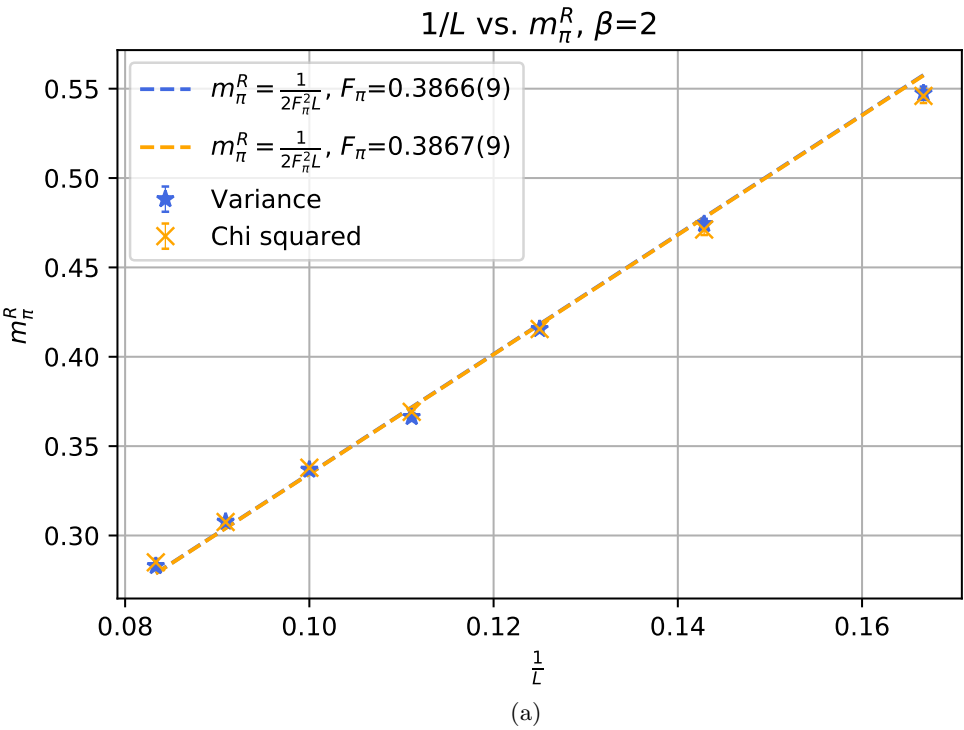


Figure 4: m_π vs. $(m^2_{pcac}g)^{1/3}$ for $\beta = 5$. The pion mass was measured using σ_3 .

Pion decay constant



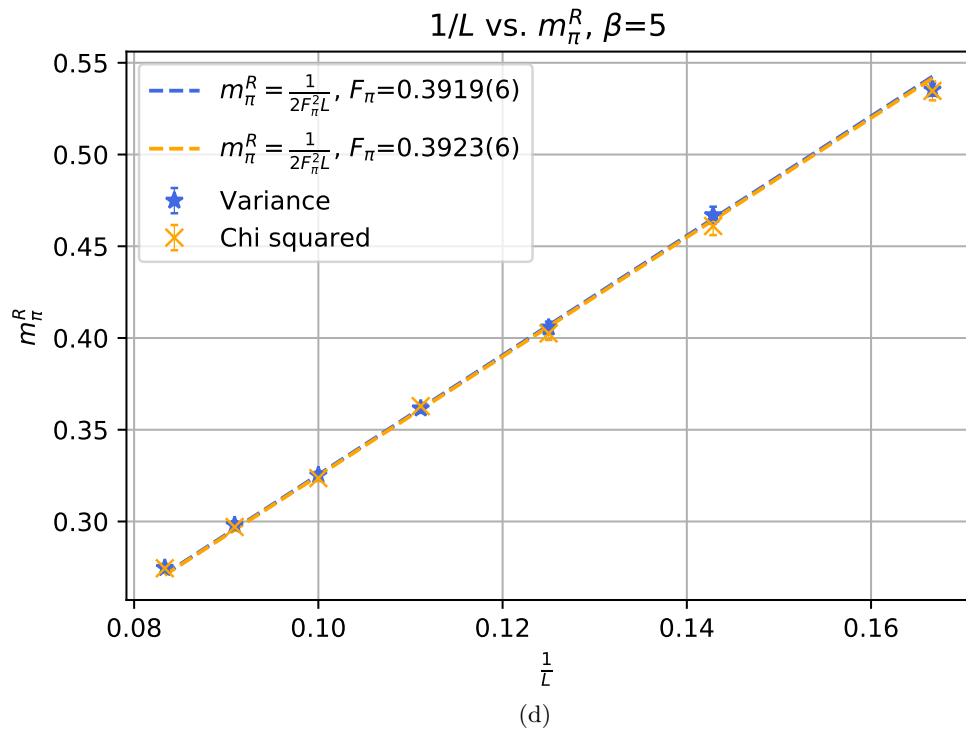
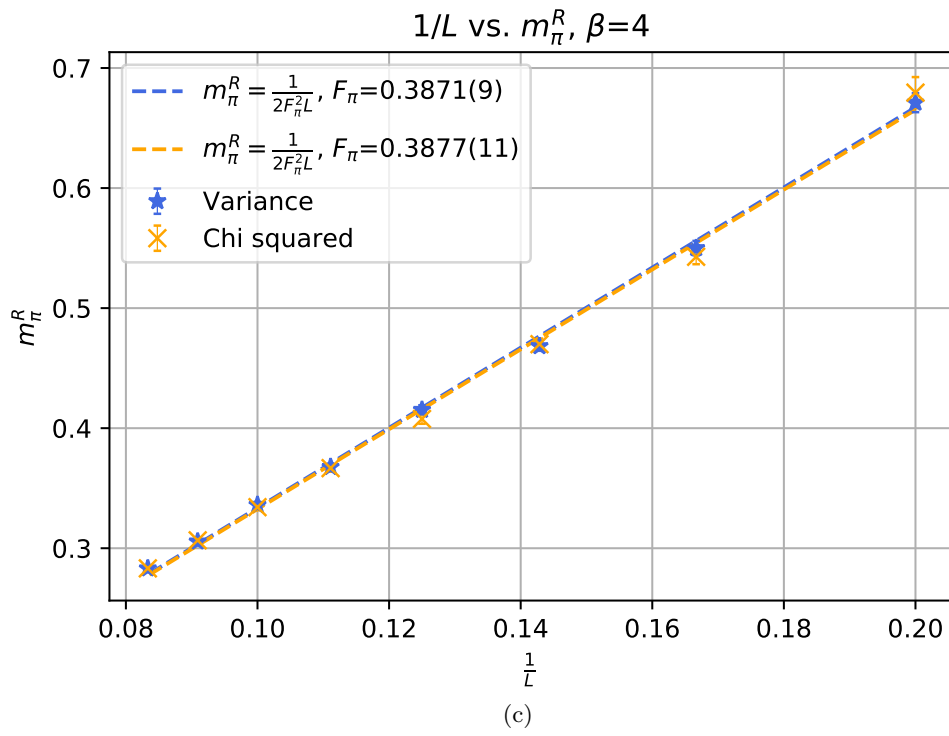


Figure 5: m_π^R vs. $1/L$. We fitted a function of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$