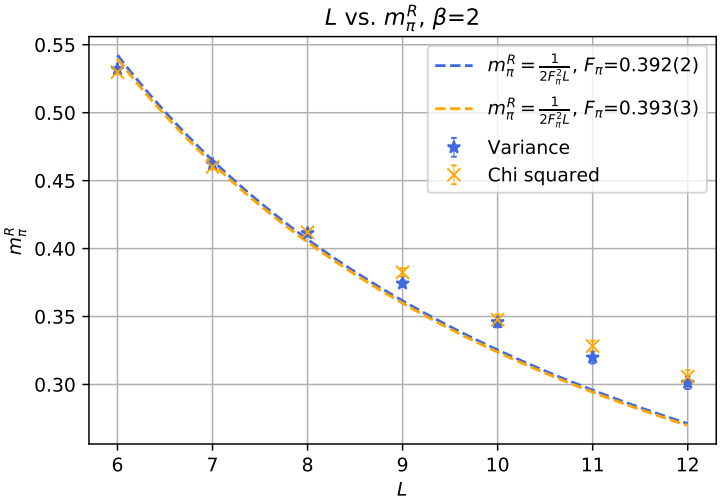
Determining F_π

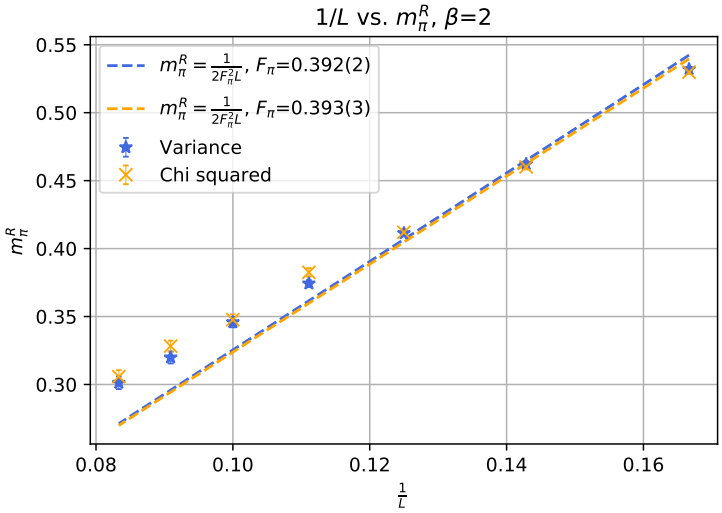
Jaime Fabián Nieto Castellanos

September 9, 2021

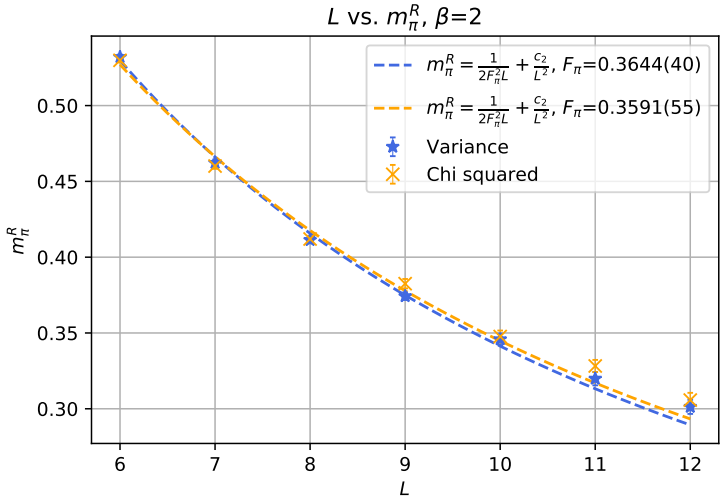
$\beta = 2$



(a) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$

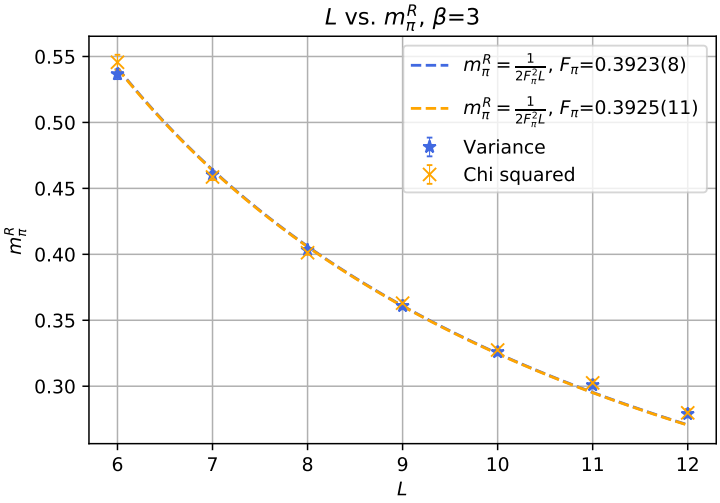


(b) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$

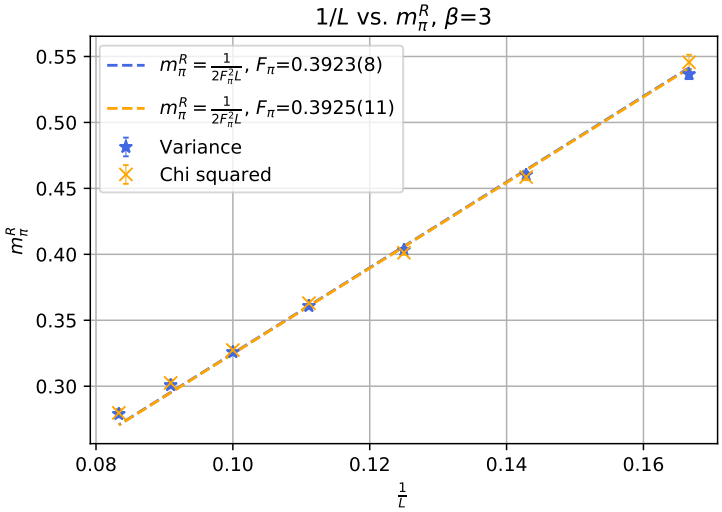


(c) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L^2} + \frac{c_2}{L^2}$. For variance $c_2 = -3.52(56)$, while for chi squared $c_2 = -4.30(78)$.

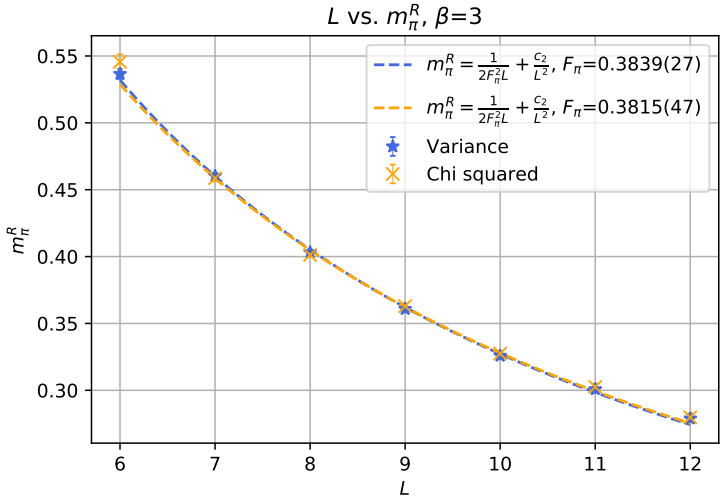
$\beta = 3$



(d) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$

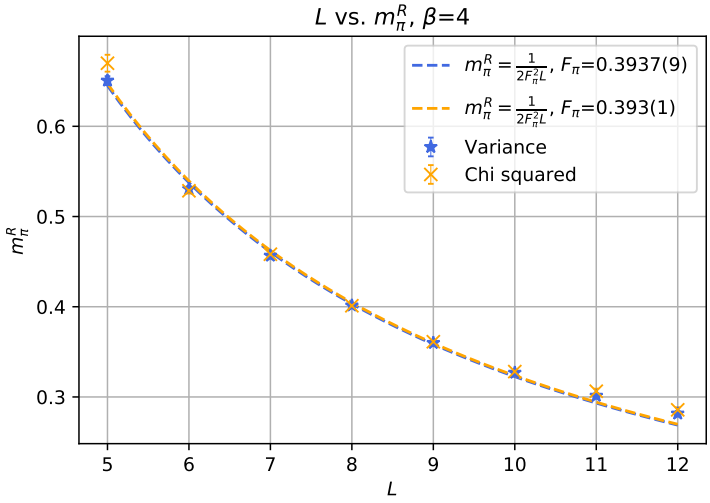


(e) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$

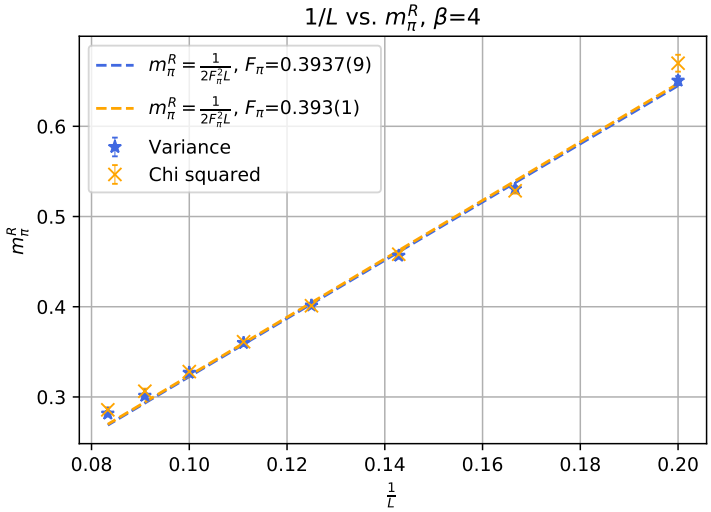


(f) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L^2} + \frac{c_2}{L^2}$. For variance $c_2 = -1.20(40)$, while for chi squared $c_2 = -1.58(70)$.

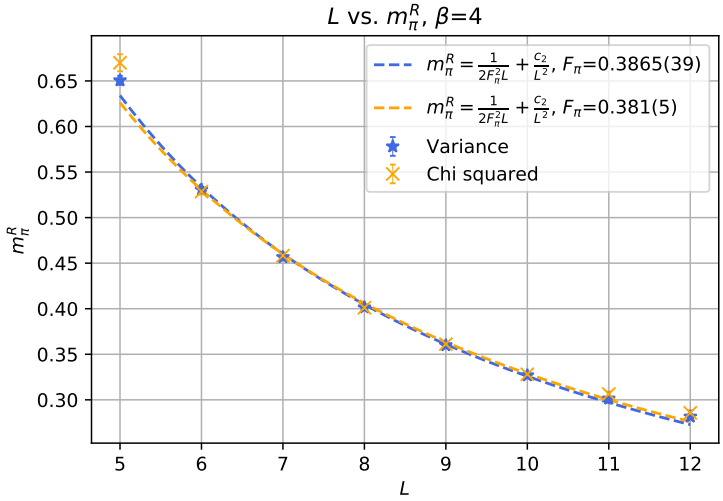
$\beta = 4$



(g) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$

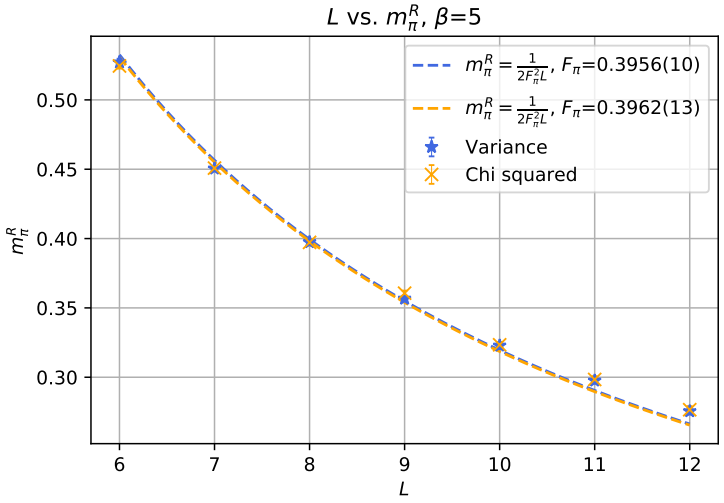


(h) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$

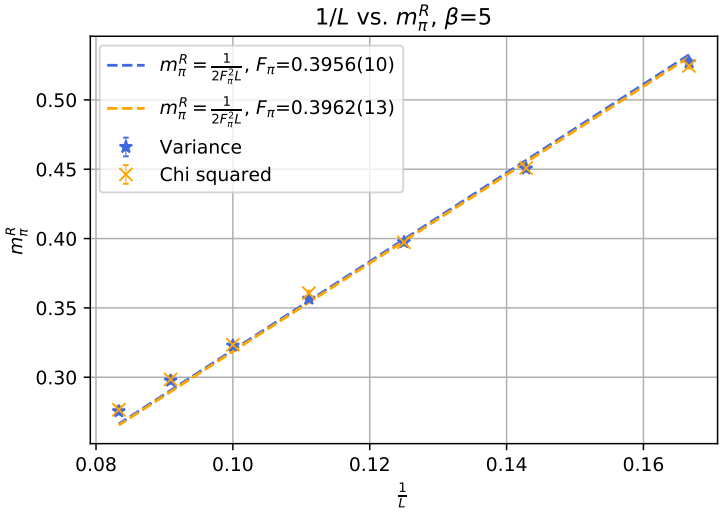


(i) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L^2} + \frac{c_2}{L^2}$. For variance $c_2 = -0.88(50)$, while for chi squared $c_2 = -1.56(77)$.

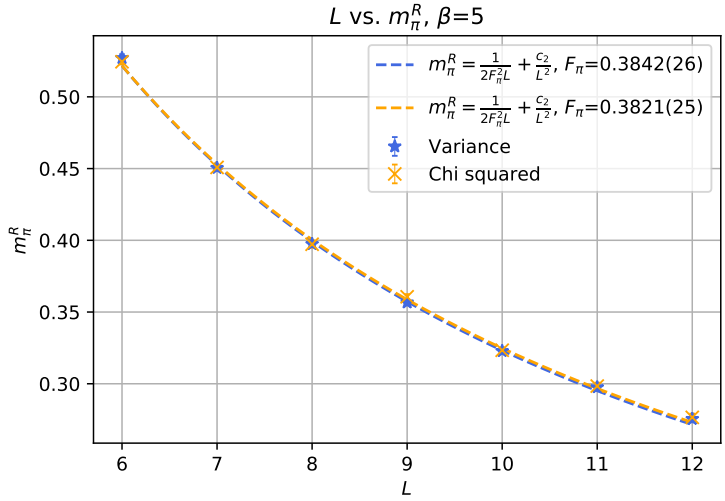
$\beta = 5$



(j) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$



(k) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$



(l) Fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L^2} + \frac{c_2}{L^2}$. For variance $c_2 = -1.54(36)$, while for chi squared $c_2 = -1.77(33)$.

In Table 1 we show the values of F_π when one fits a function of the form $m_\pi^R = \frac{1}{2F_\pi^2 L}$. In Table 2 we show the values of F_π by performing a fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L^2} + \frac{c_2}{L^2}$.

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 $m_\pi^R = \frac{1}{2F_\pi^2 L}$

β	F_π variance	F_π chi-squared	c_2 variance	c_2 chi-squared
2	0.3644(40)	0.3591(55)	-3.52(56)	-4.30(78)
3	0.3839(27)	0.3815(47)	-1.20(40)	-1.58(70)
4	0.3865(39)	0.381(5)	-0.88(50)	-1.56(77)
5	0.3842(26)	0.3821(25)	-1.54(36)	-1.77(33)

Table 2: F_π obtained through a fit of the form $m_\pi^R = \frac{1}{2F_\pi^2 L} + \frac{c_2}{L^2}$