

# B-physics

Alessandro Conigli

ALPHA meeting, 07-08 April 2025 - Valencia

# Currently available ensembles - relativistic measurements

## ► 2pt measurements

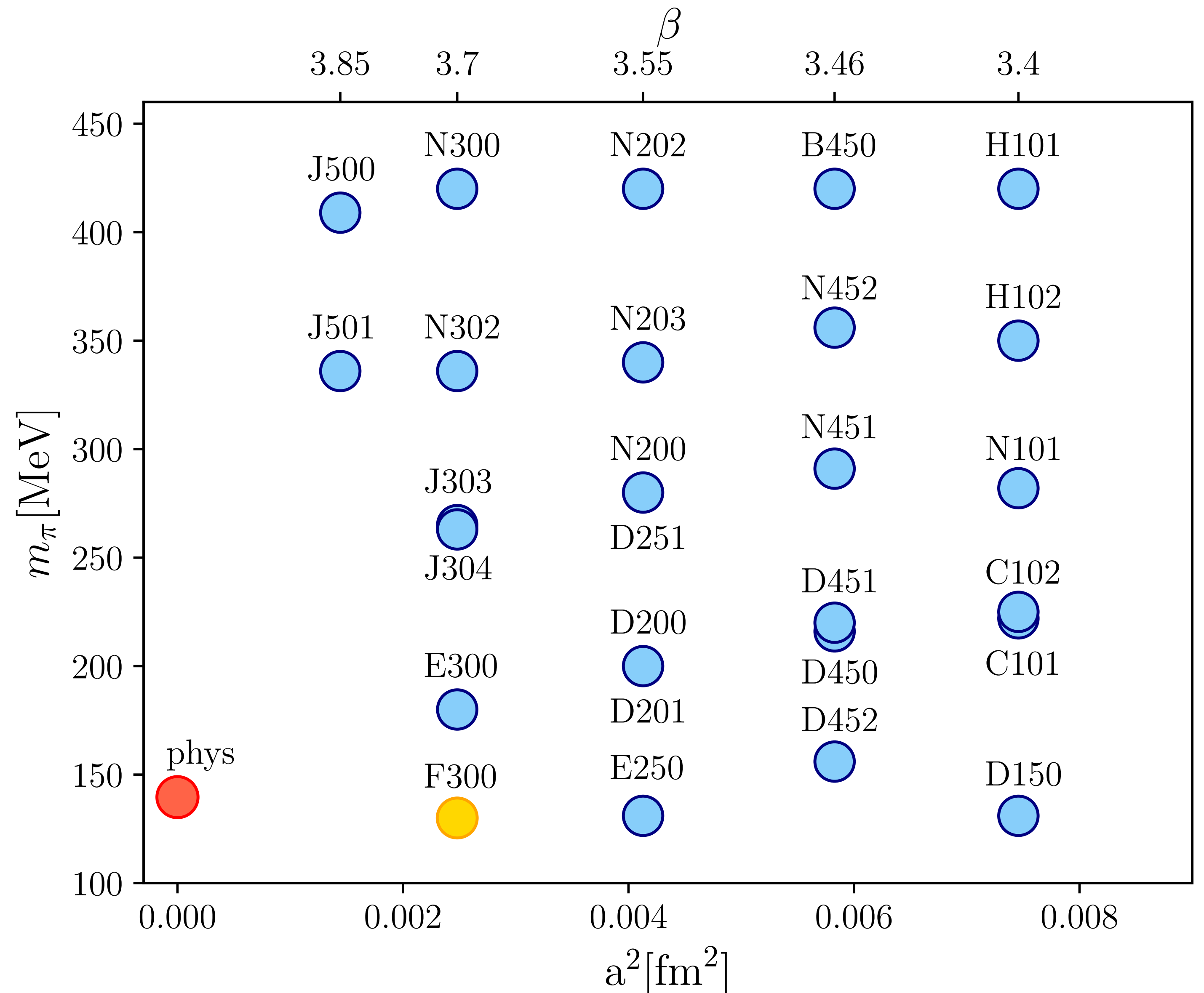
| Ens id | $N_{\text{config}}$ |
|--------|---------------------|
| H101   | 2016                |
| B450   | 1600                |
| H400   | 1045                |
| N202   | 1902                |
| N203   | 1543                |
| N200   | 1712                |
| D200   | 110/2000            |
| N300   | 1540                |
| J500   | 1875                |

## ► 3pt measurements

| Ens id | $N_{\text{config}}$ |
|--------|---------------------|
| H101   | 2016                |
| B450   | 1600                |
| H400   | 1045                |
| N202   | 1902                |
| N203   | 1482/1543           |
| N200   | 270/1712            |
| D200   | 193/2000            |
| N300   | 1540                |
| J500   | 1875                |

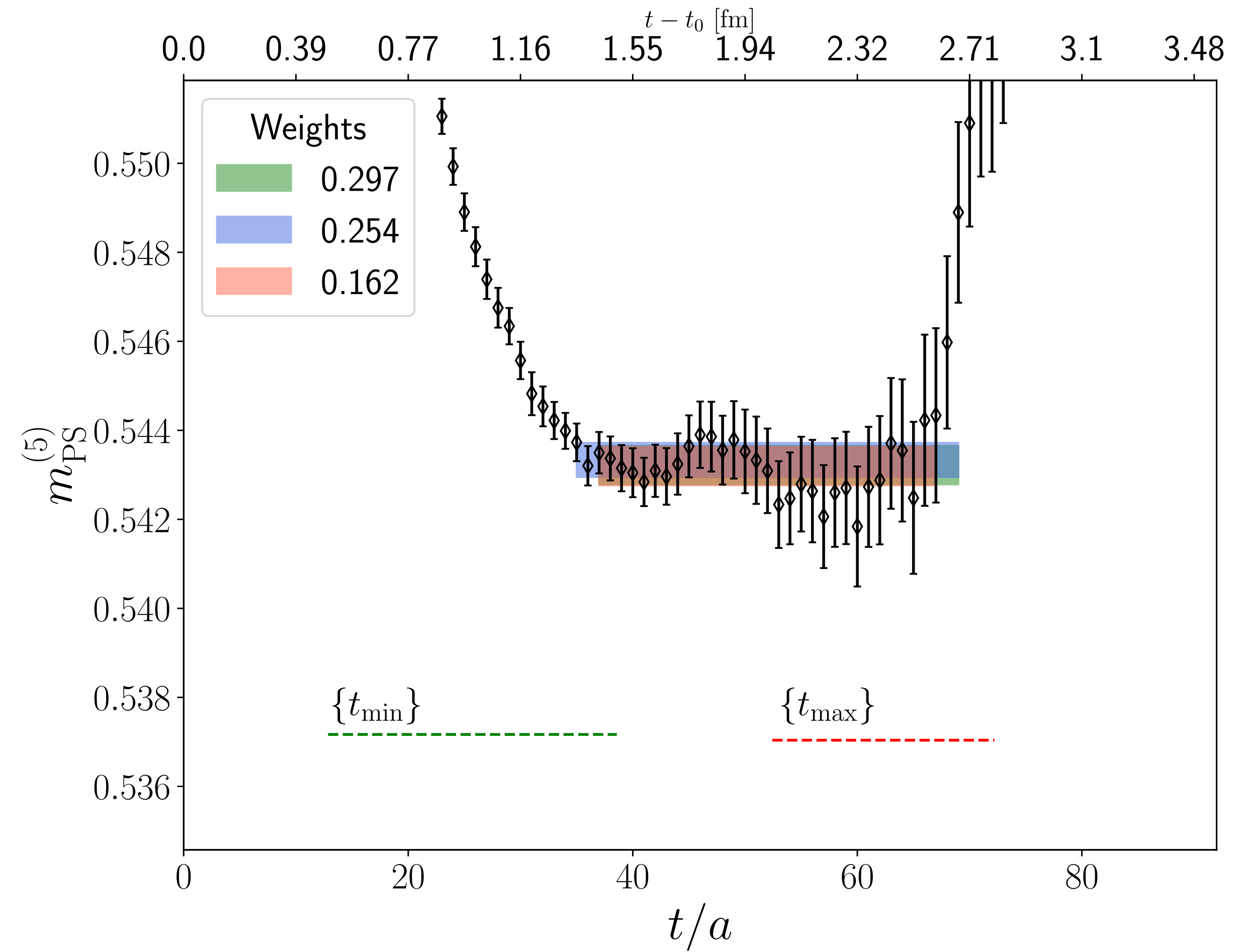
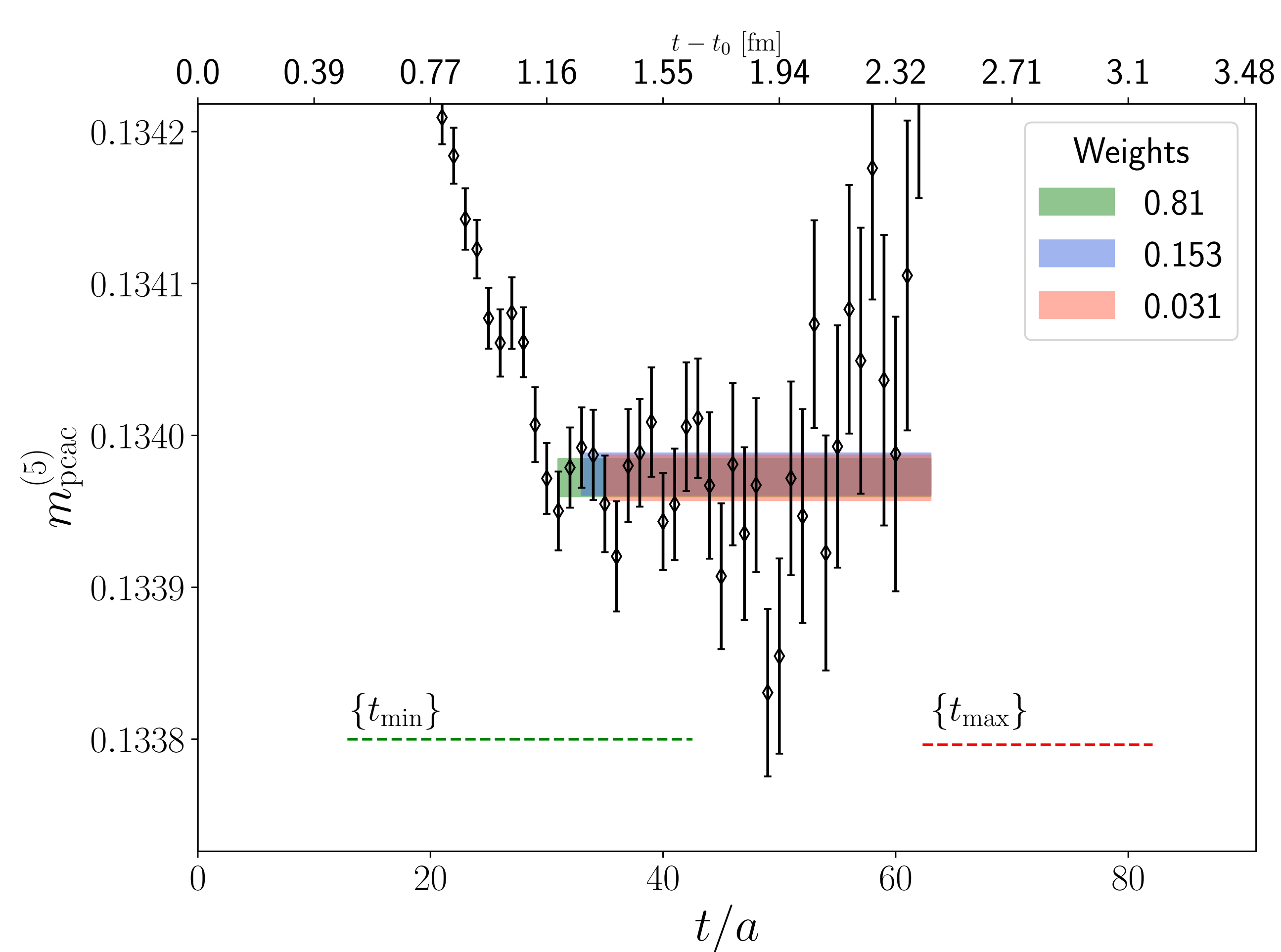
# Additional ensemble?

- ▶  $\beta = 3.4$ 
  - ▶ H102, N101
- ▶  $\beta = 3.46$ 
  - ▶ N452, N451
- ▶  $\beta = 3.55$ 
  - ▶ D200, E250
- ▶  $\beta = 3.7$ 
  - ▶ J307, J306, E300



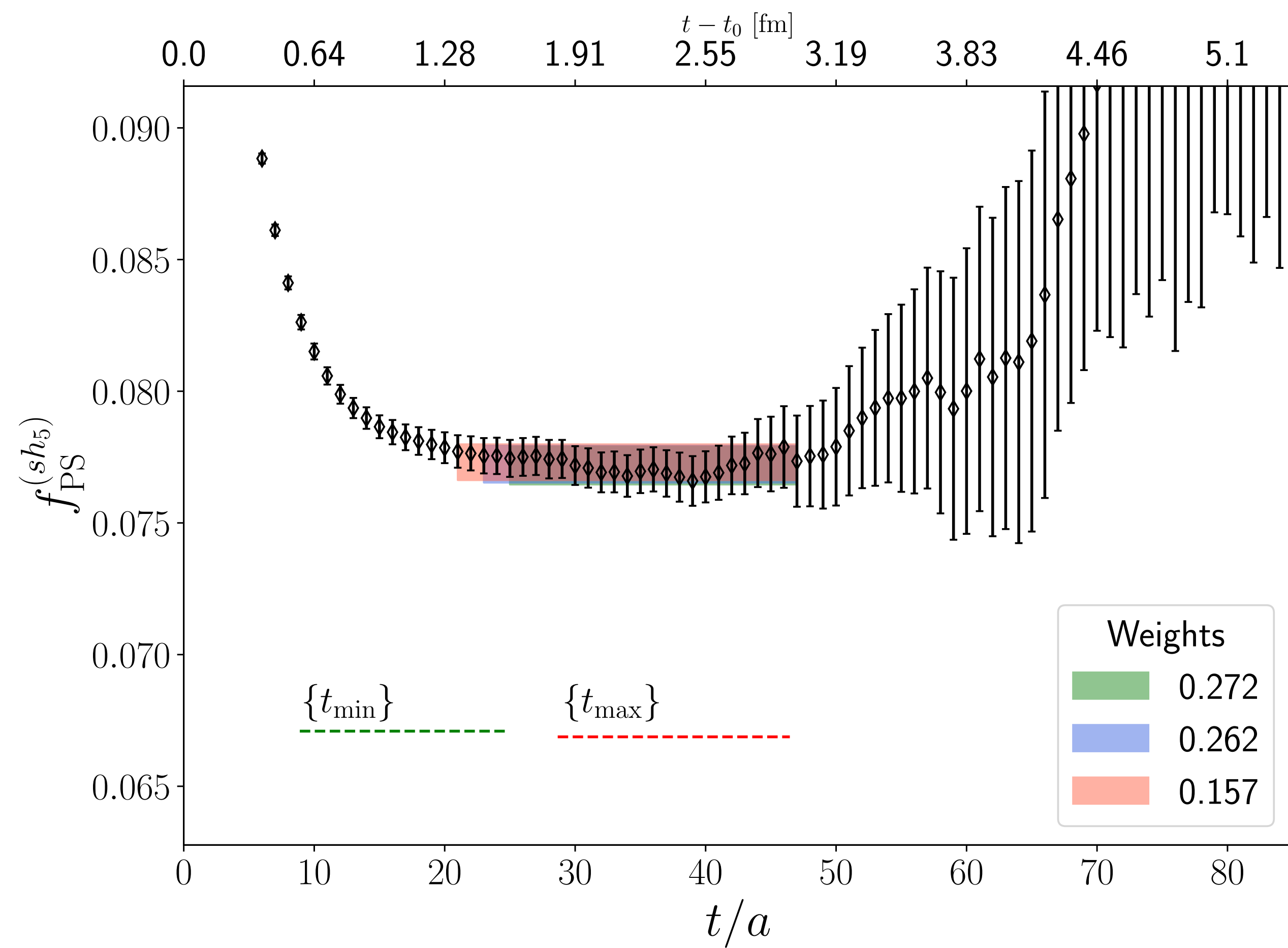
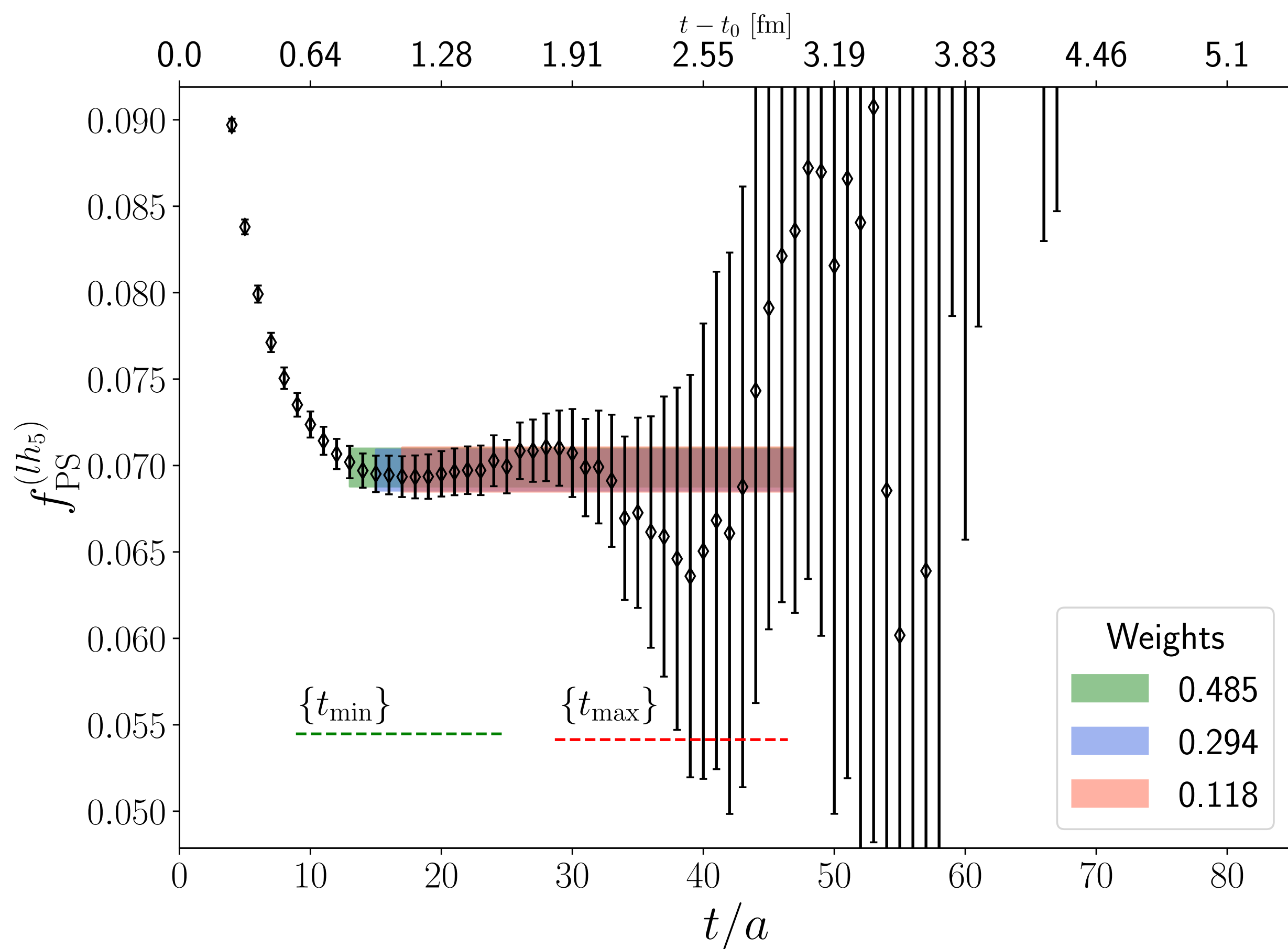
# Updated observable extraction

► J500

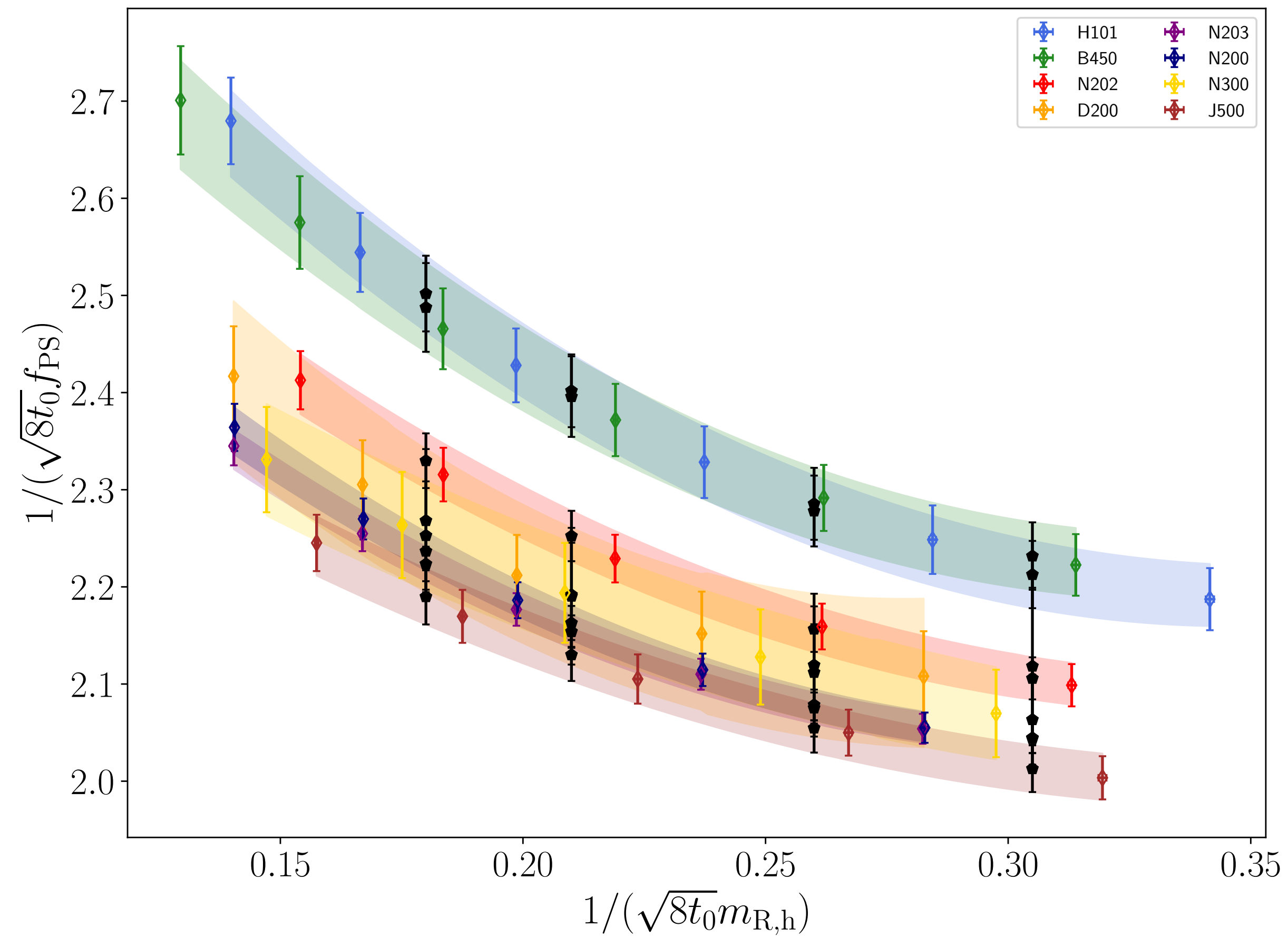
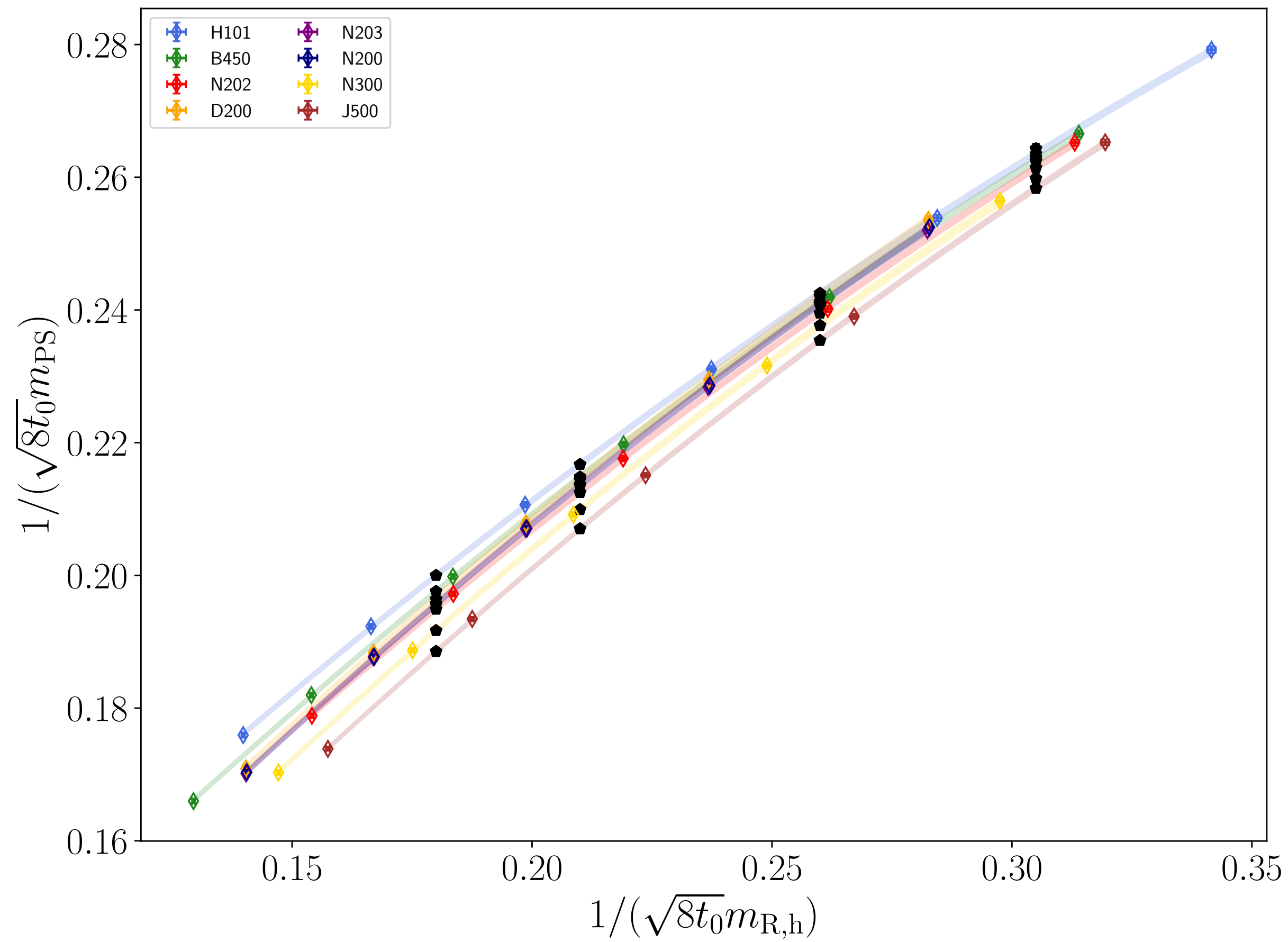


# Updated observable extraction

► D200

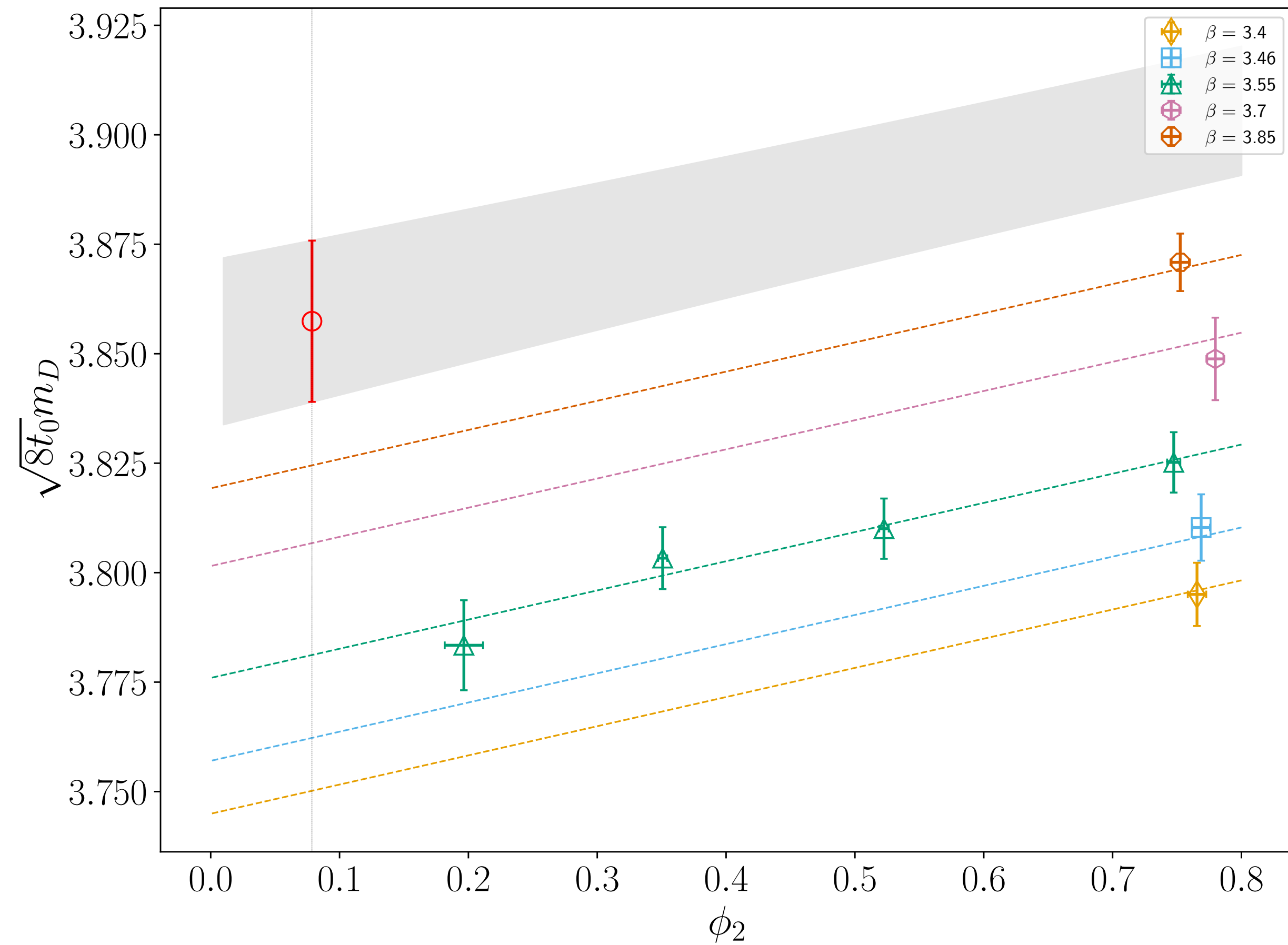


# Interpolation to target renormalised heavy quark masses

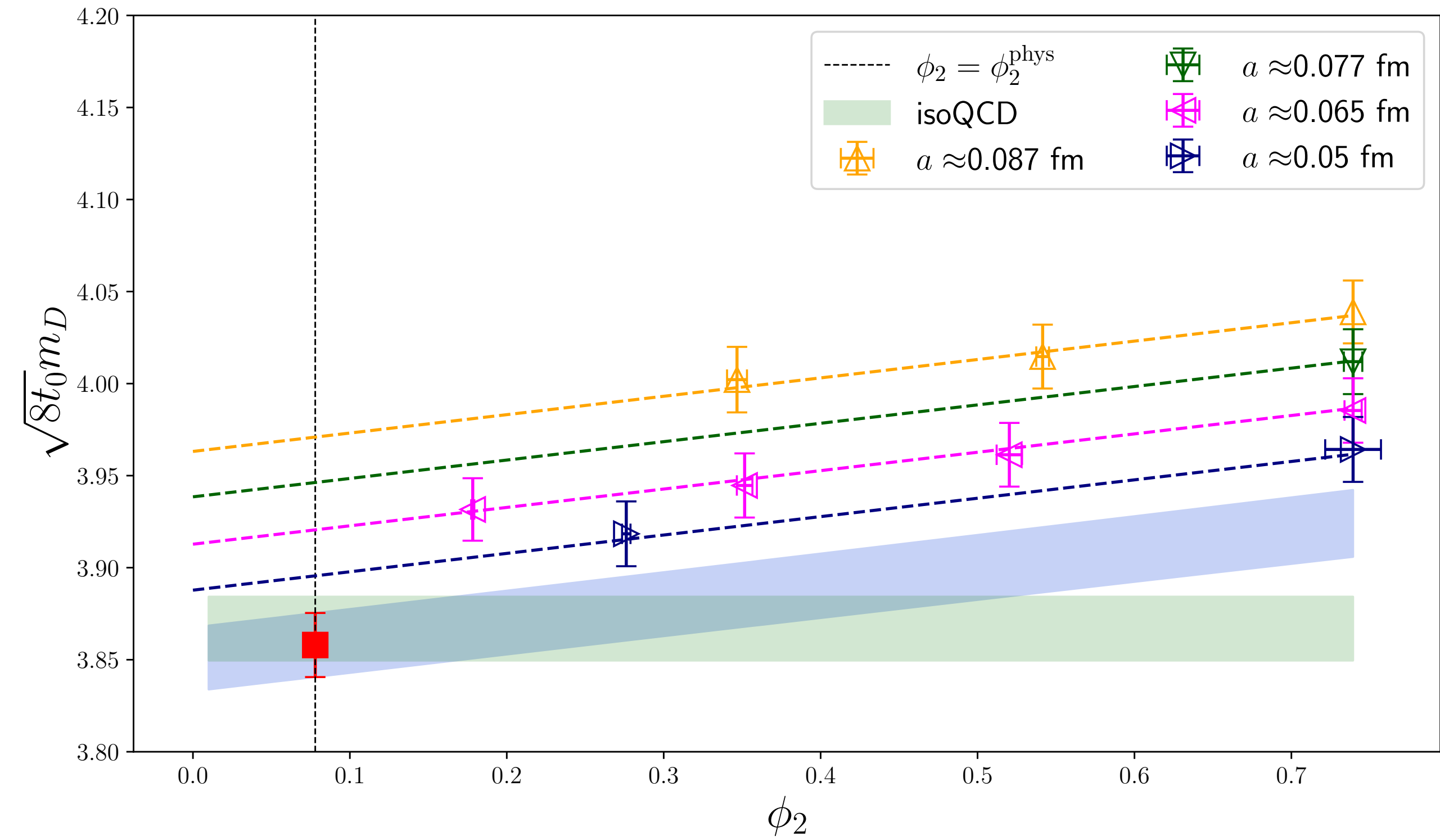


# Preliminary chiral dependence - $m_D$

► Chiral continuum extrapolation around the charm quark region



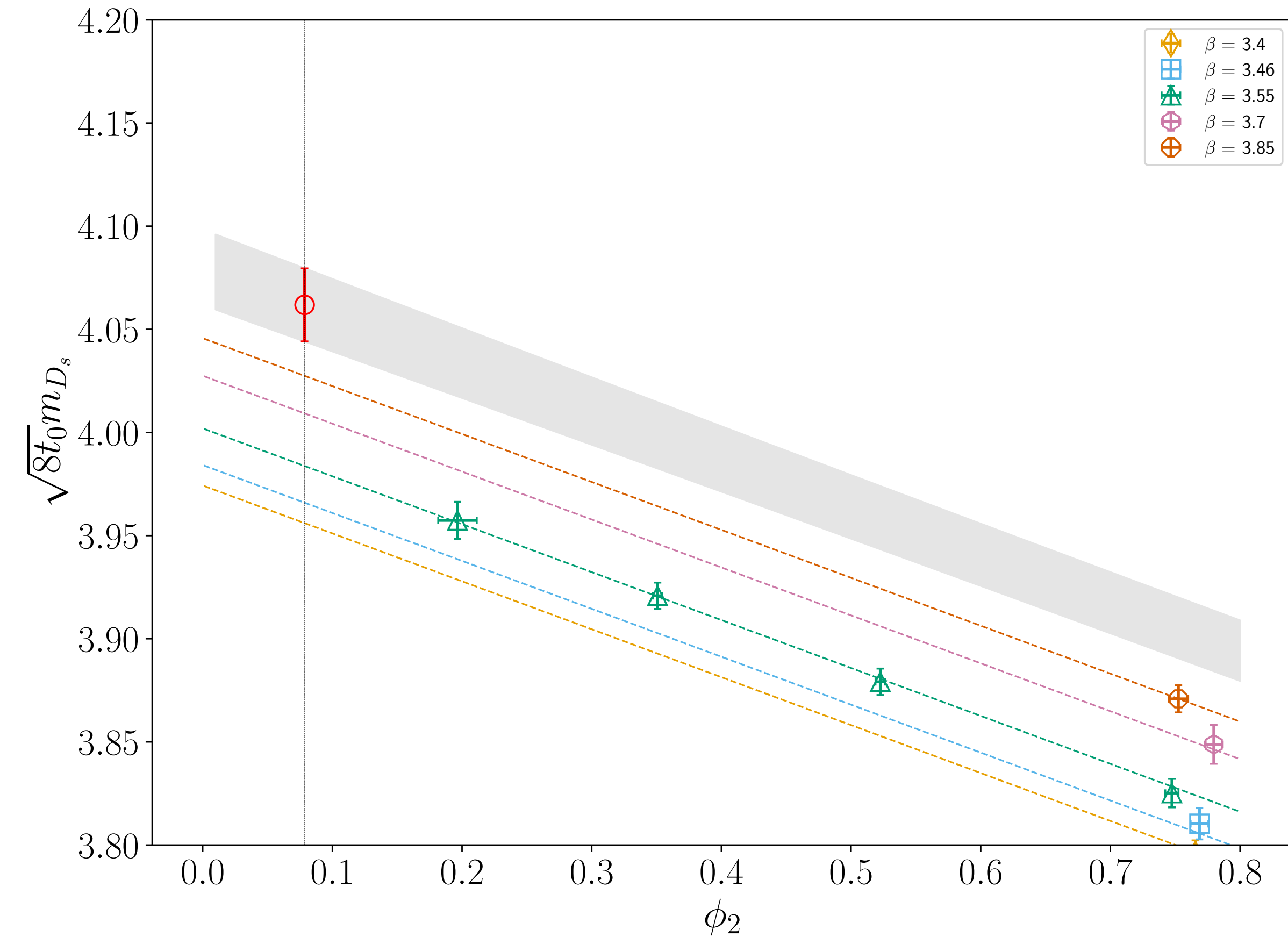
► Current B-physics data



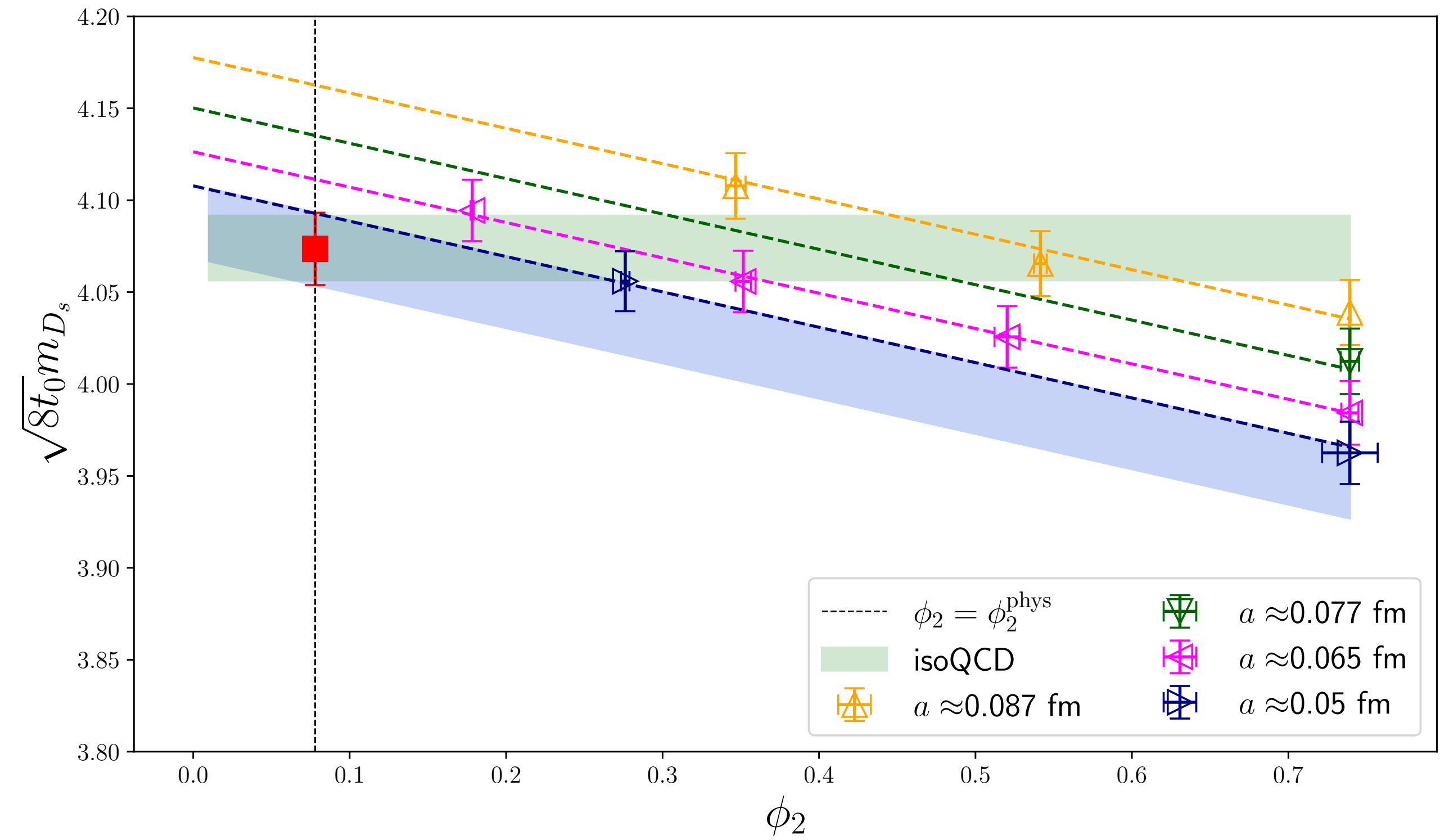
► Twisted mass data from 2309.14154

# Preliminary chiral dependence - $m_{D_s}$

► Chiral continuum extrapolation around the charm quark region



► Current B-physics data

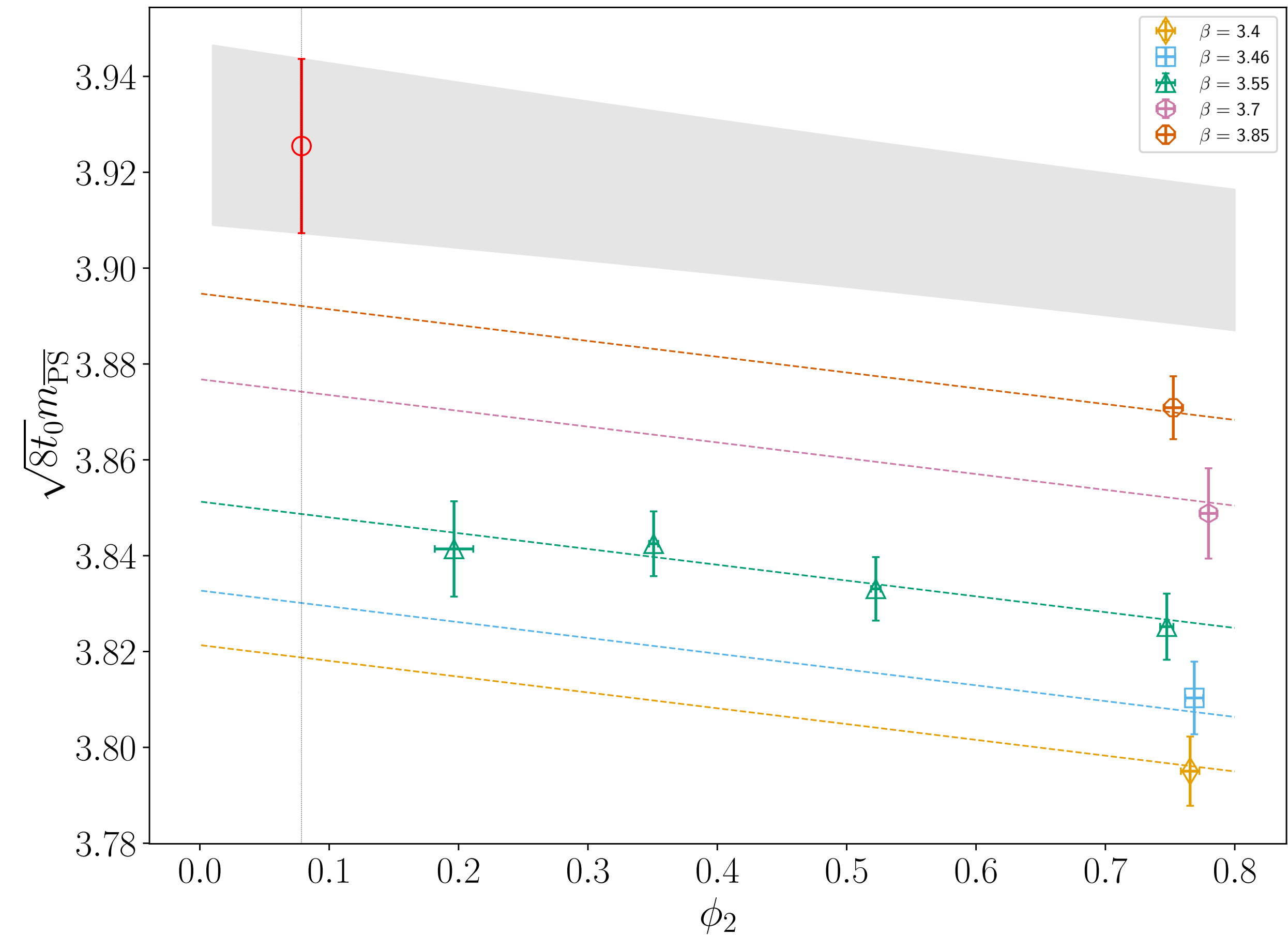
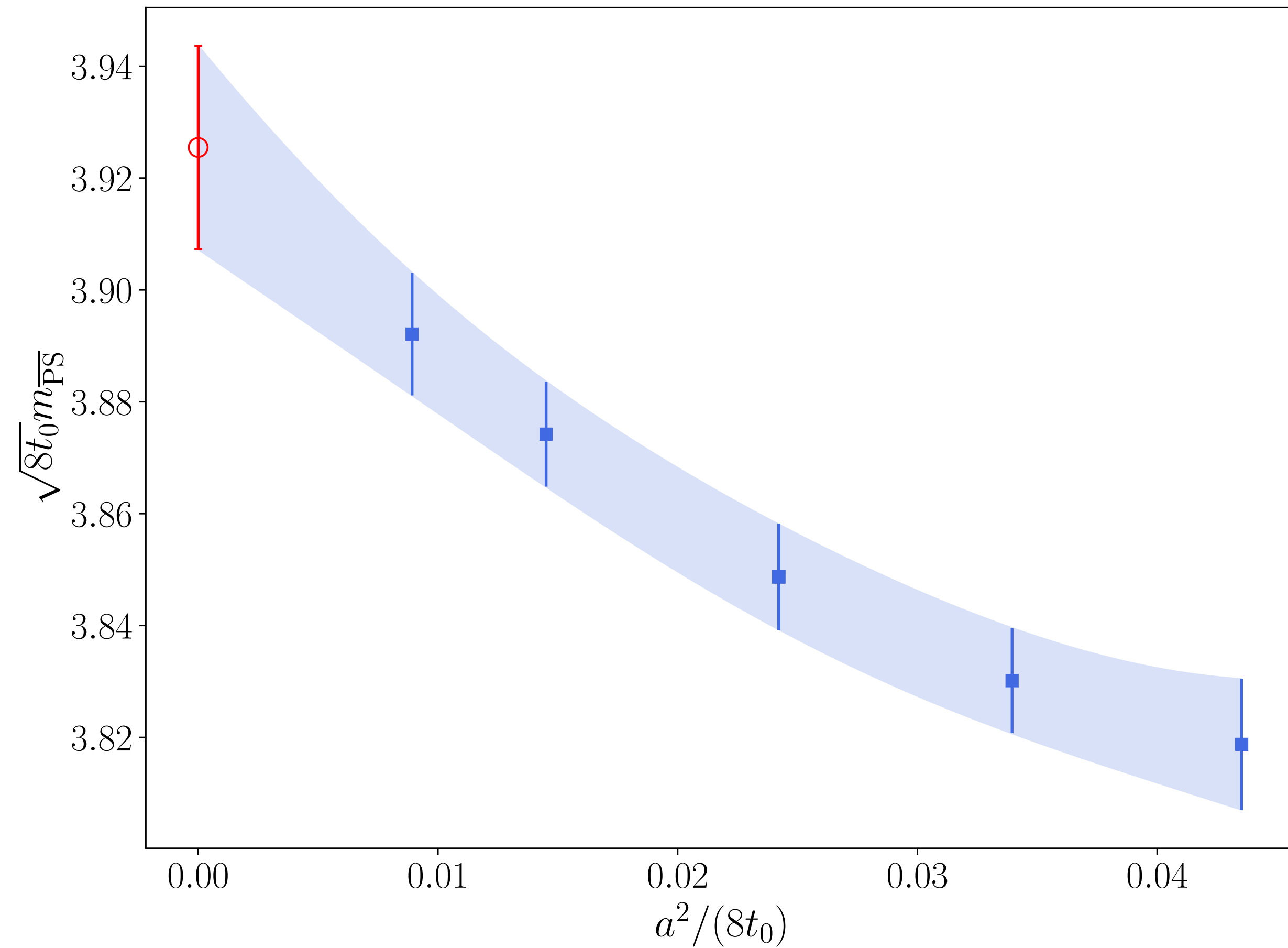


► Twisted mass data from 2309.14154



# Preliminary chiral dependence - $m_{\bar{D}}$

- ▶ Chiral continuum extrapolation around the charm quark region
- ▶ Flavour average combination of pseudoscalar masses

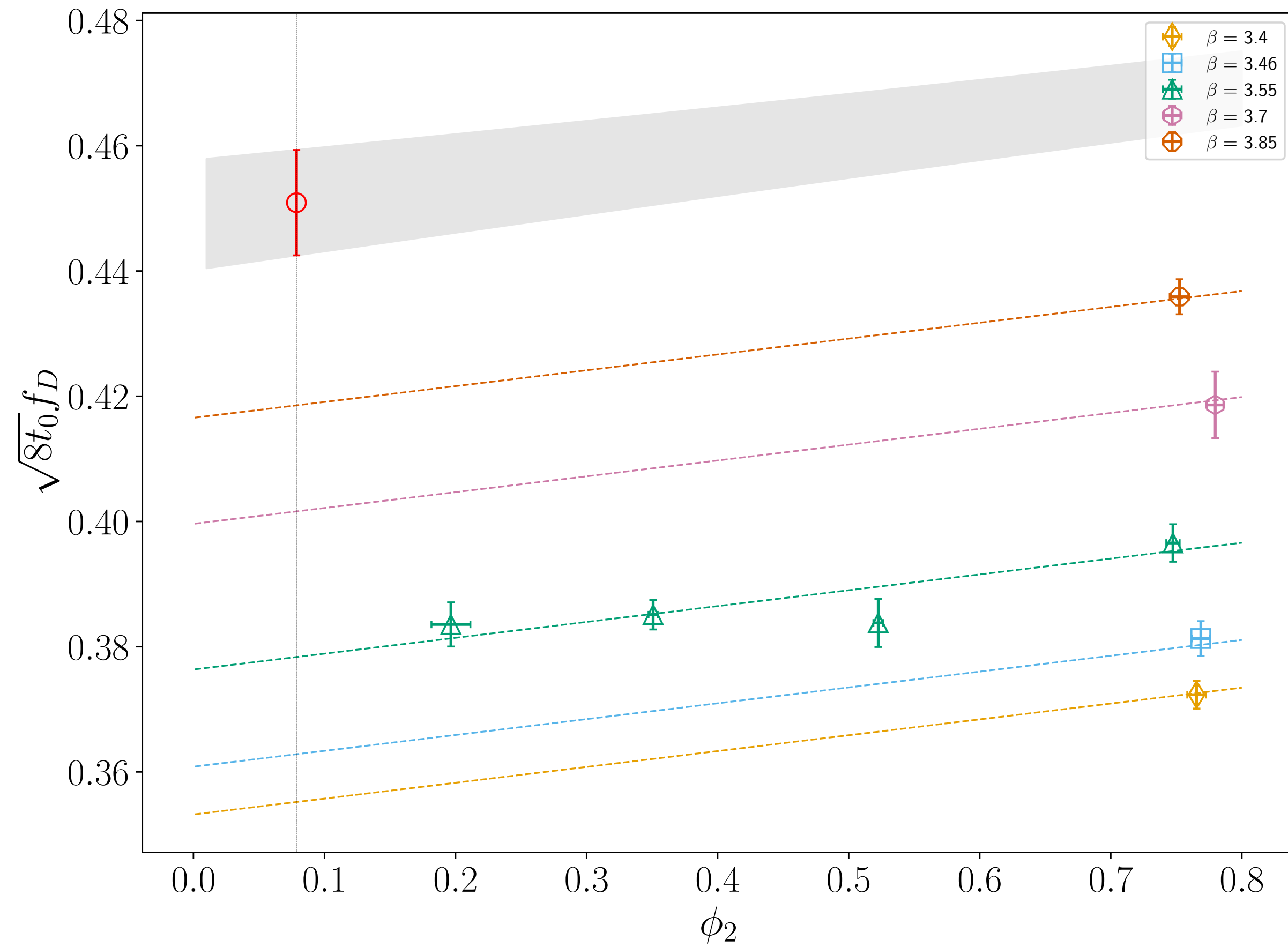


$$m_{\text{PS}} - m_{\text{PS}}^{SU(3)} = 10.7(4.4) \text{ MeV}$$

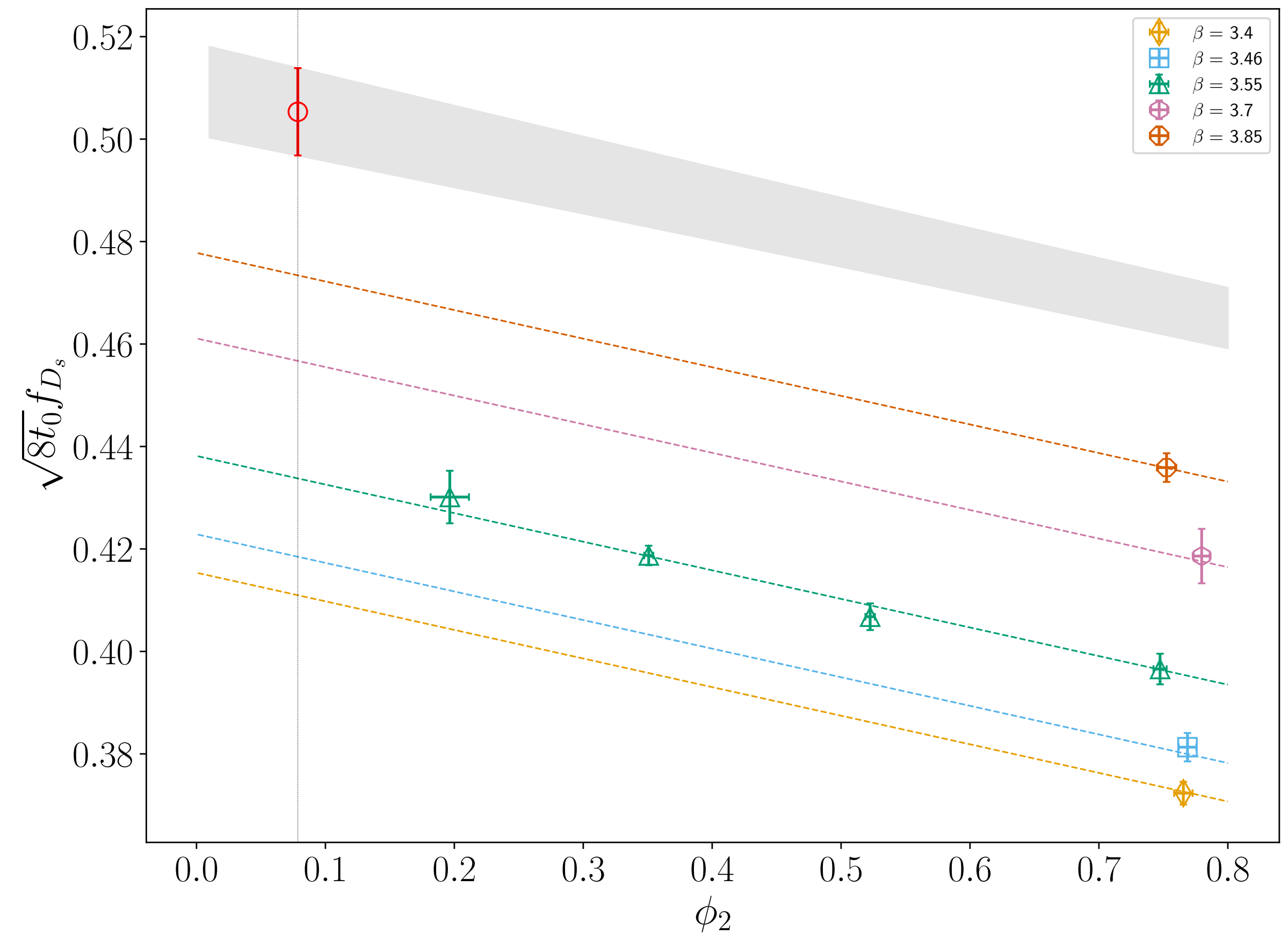
# Preliminary chiral dependence - pseudoscalar decay constants

► Chiral continuum extrapolation around the charm quark region

►  $f_D$

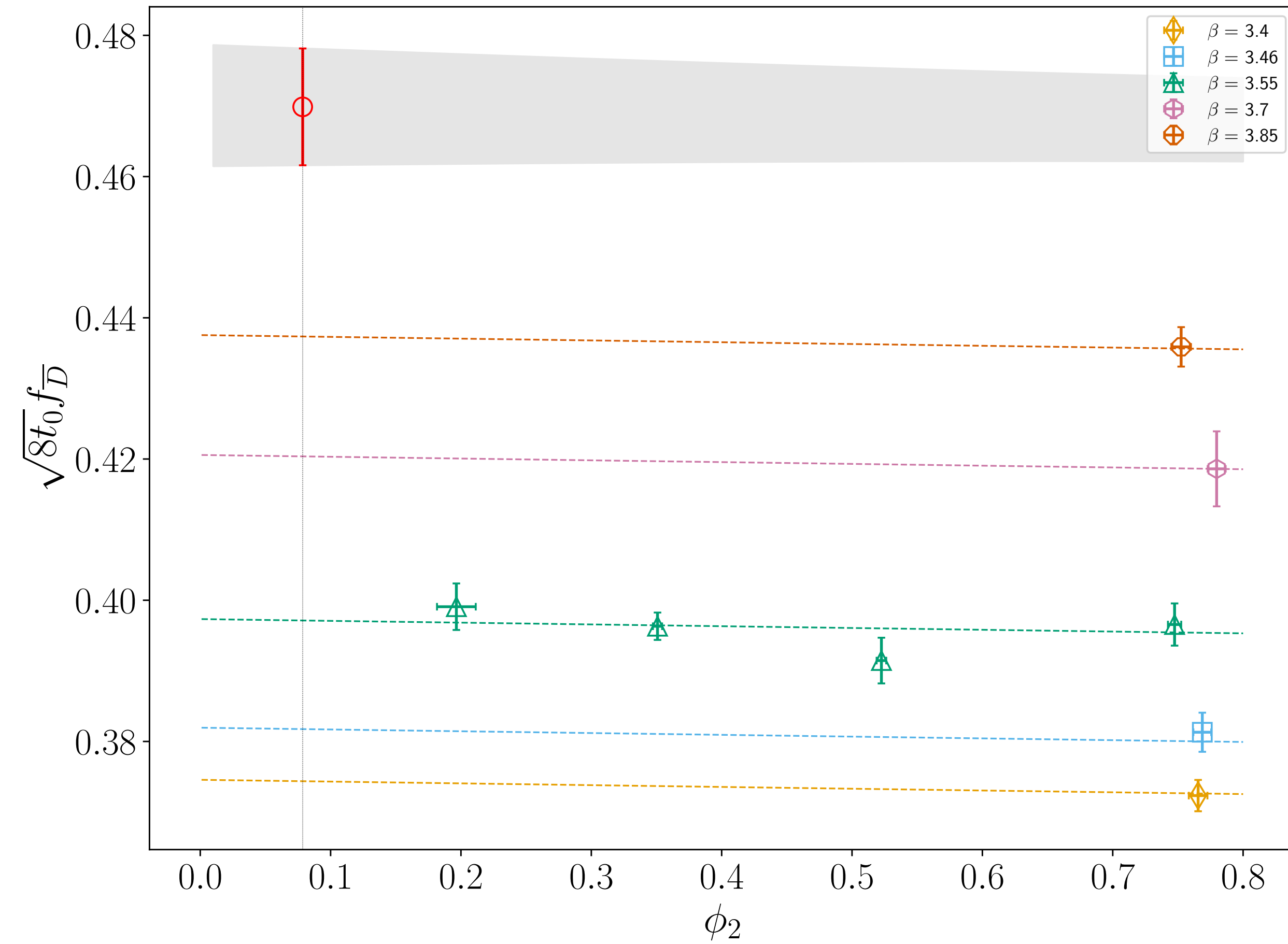
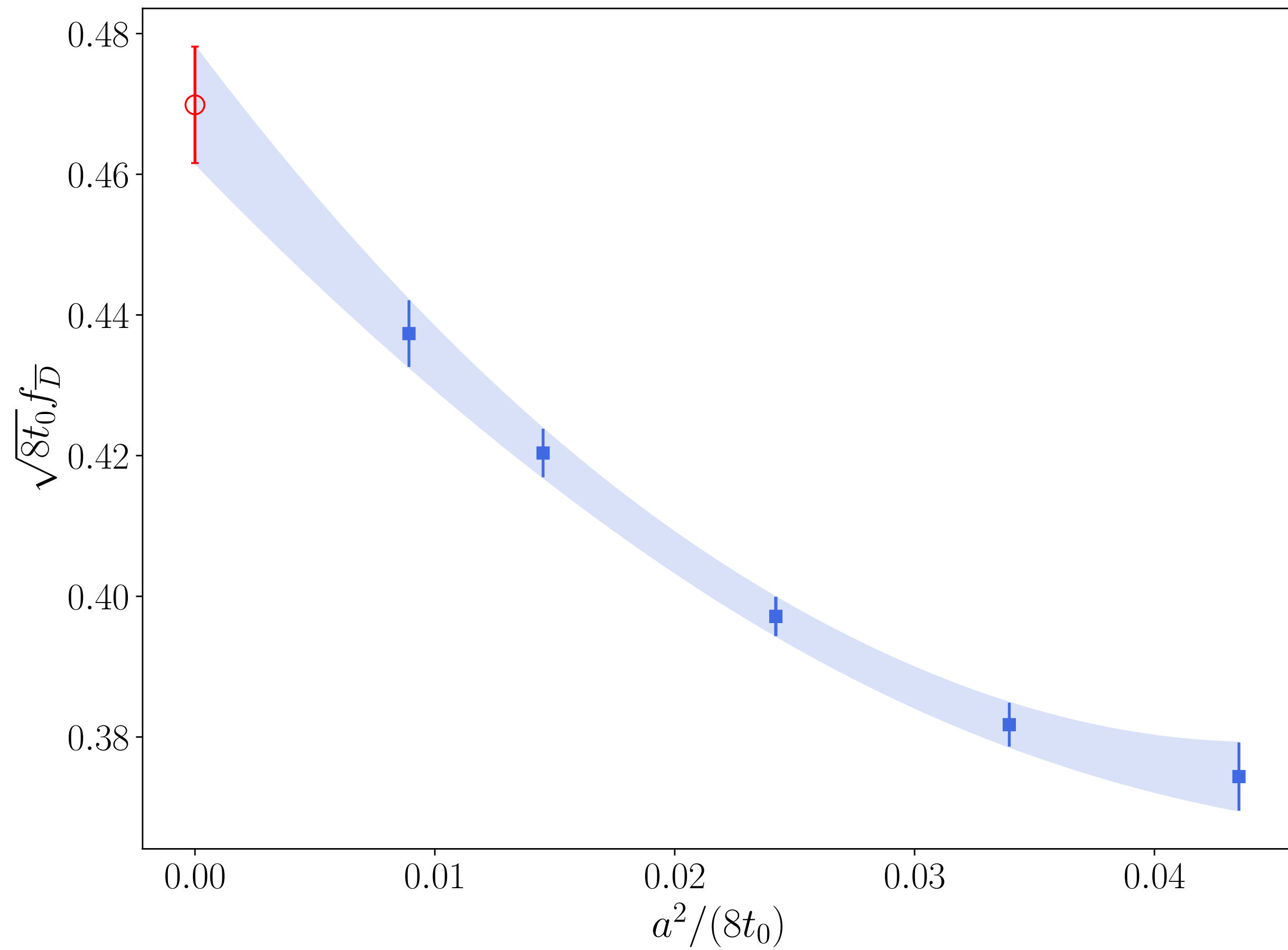


►  $f_{D_s}$



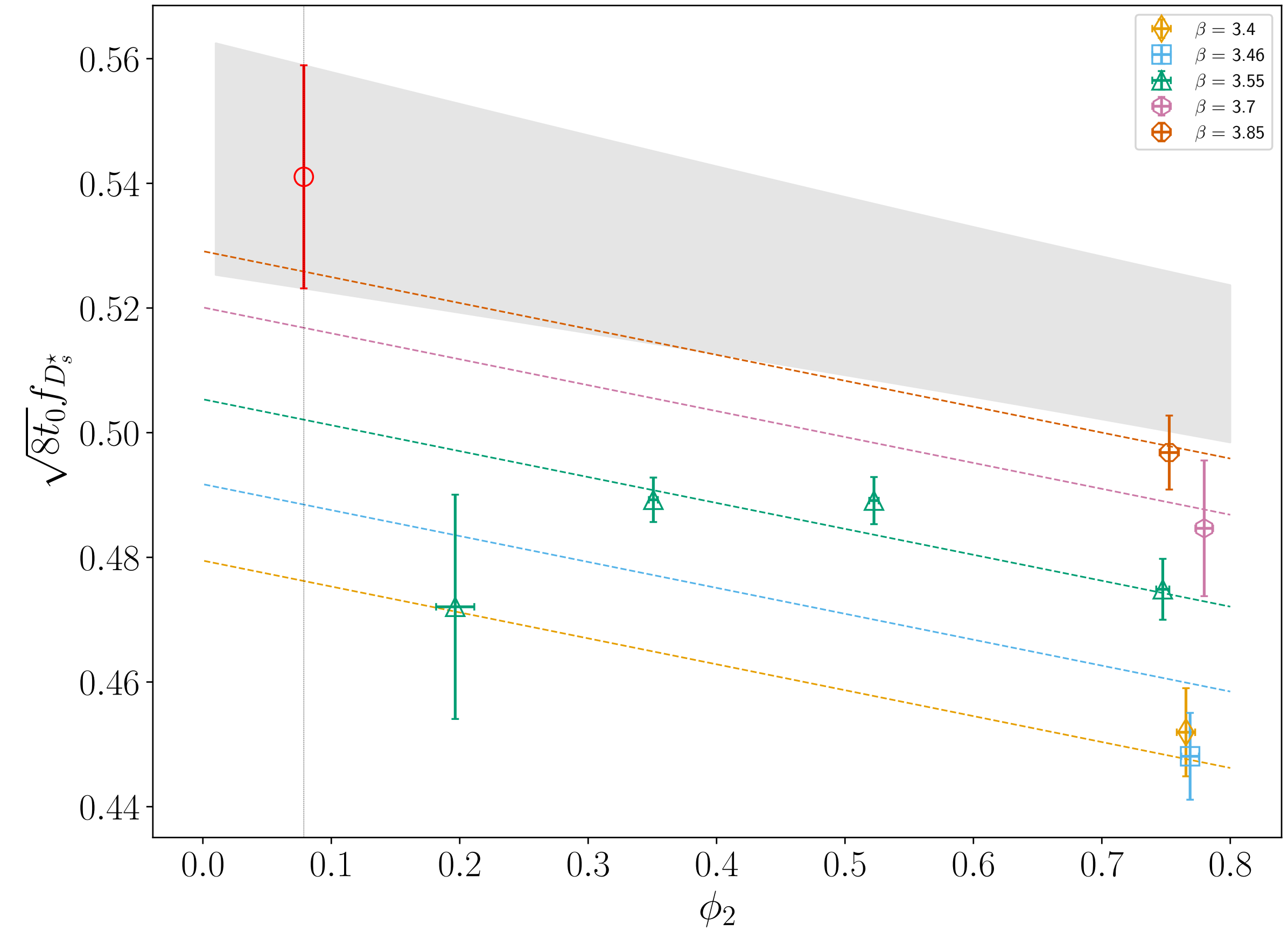
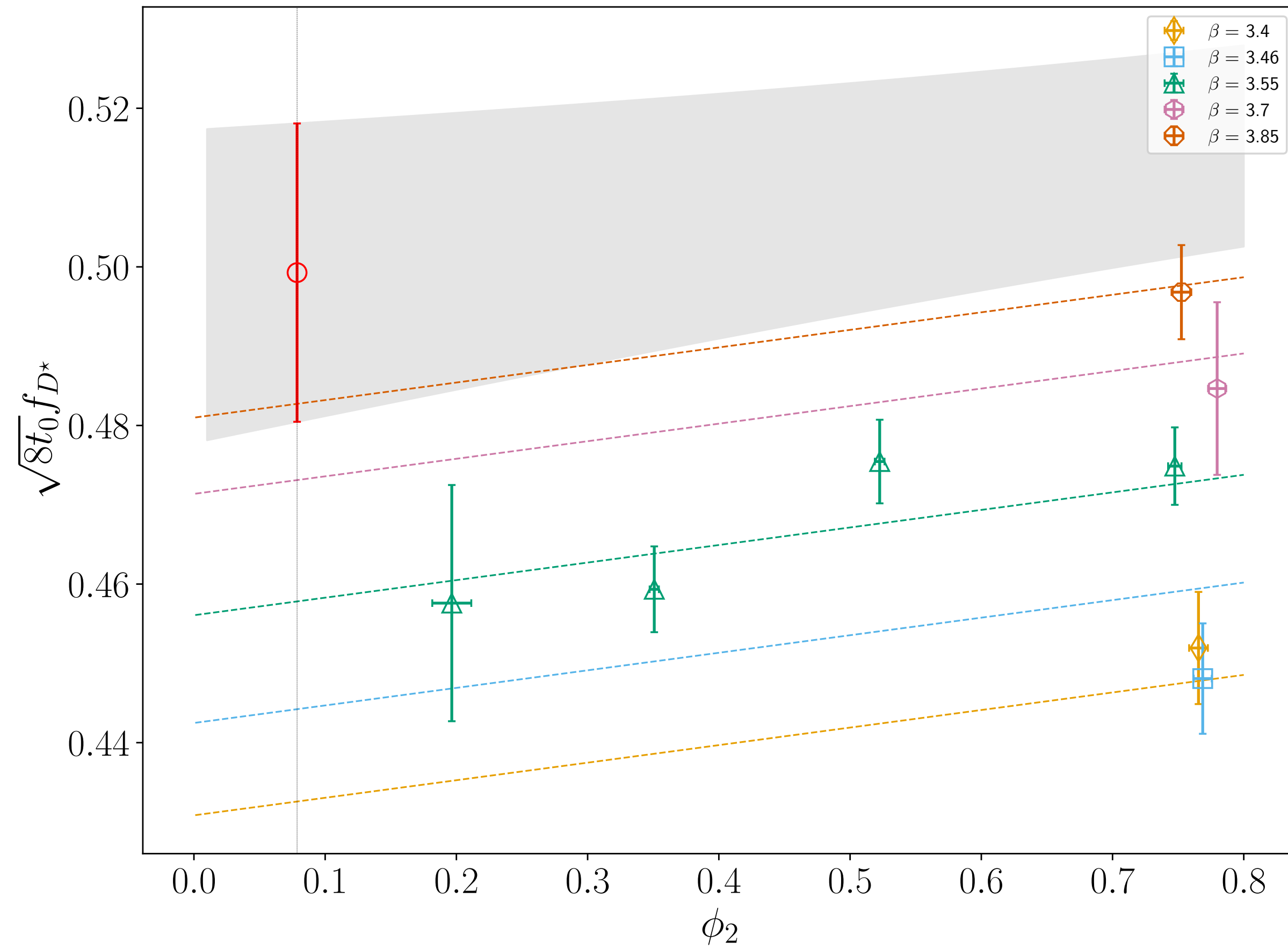
# Preliminary chiral dependence - pseudoscalar decay constants

- ▶ Chiral continuum extrapolation around the charm quark region
- ▶ Flavour average combination of pseudoscalar decay constants



# Preliminary chiral dependence - vector decay constants

► Chiral continuum extrapolation around the charm quark region



# Preliminary chiral dependence - vector decay constants

- ▶ Chiral continuum extrapolation around the charm quark region
- ▶ Flavour average combination of pseudoscalar decay constants

