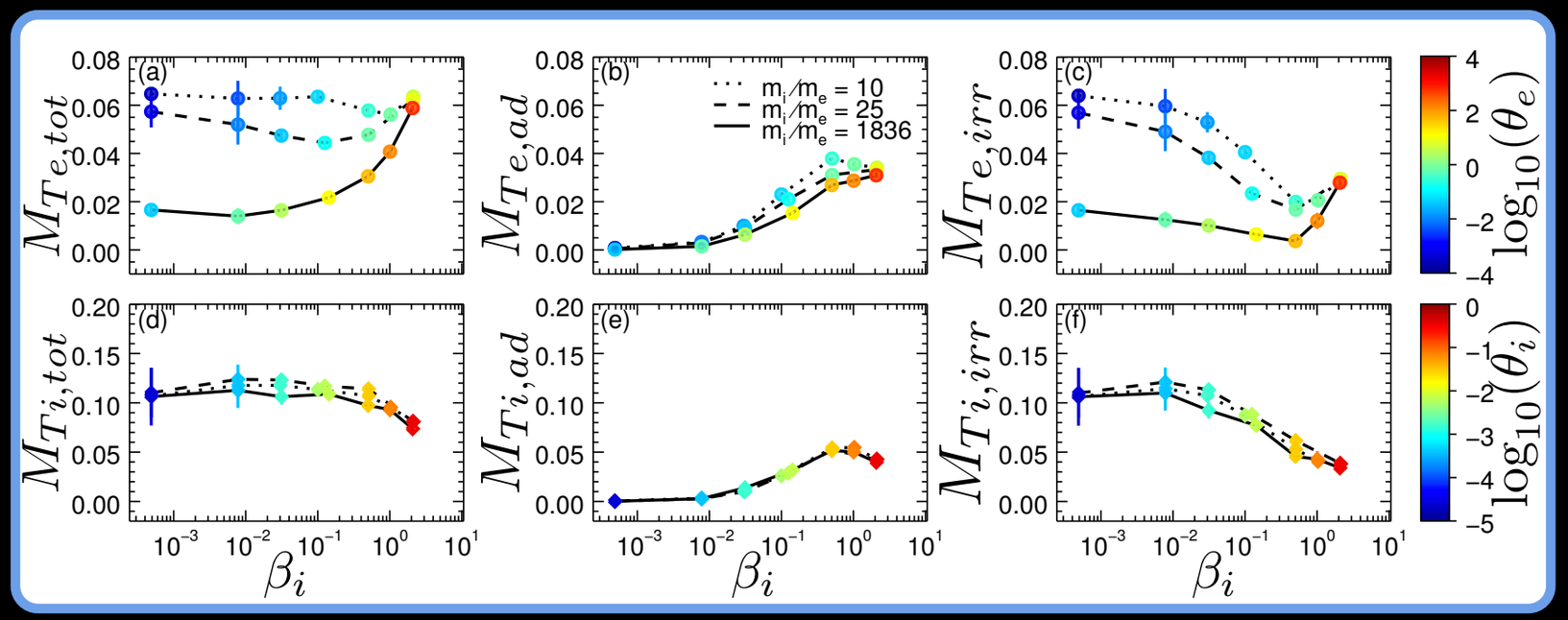
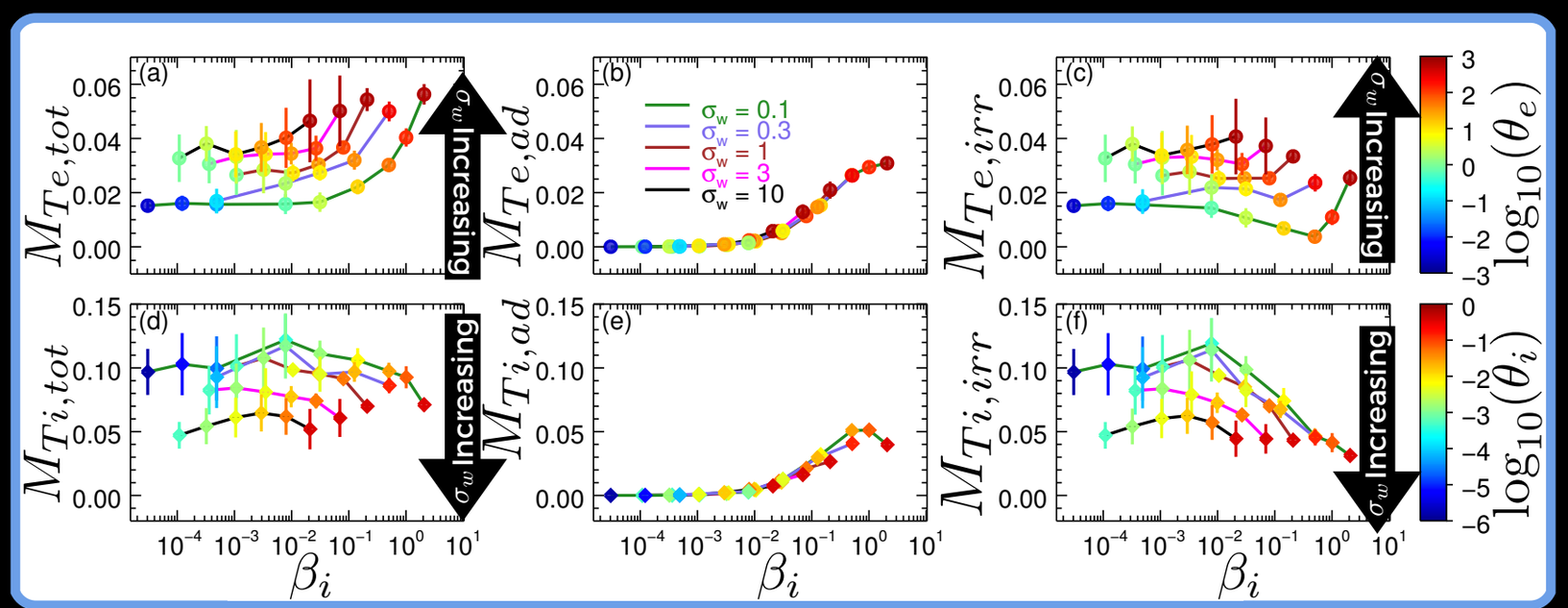
Mass ratio

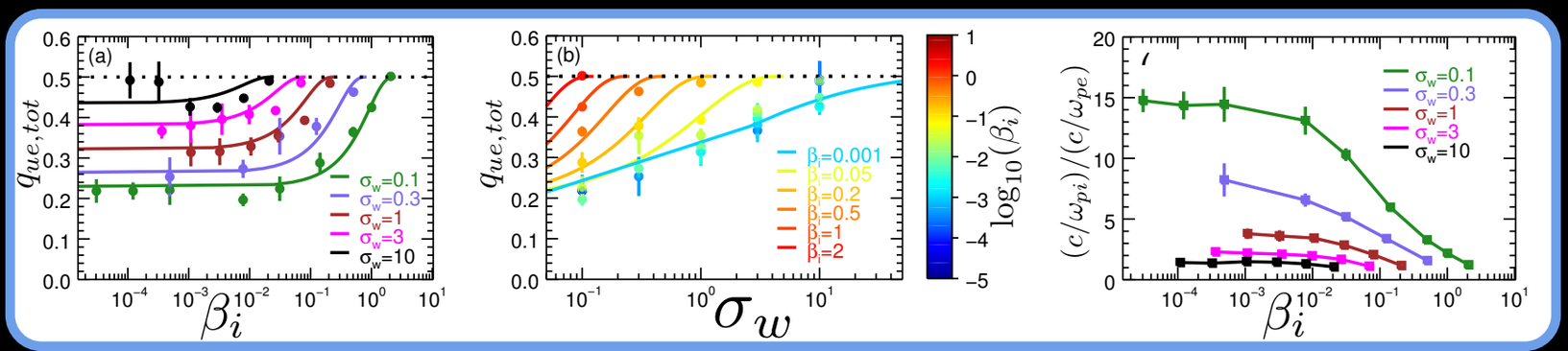
- At low β_i, electron heating depends on mass ratio, m_i/m_e
- Mass ratio ranges from 10 - 1836

Magnetization

- vary σ_w from 0.1 - 10
- Here, $m_i/m_e = 1836$ and $T_e/T_i = 1$
- At high β_i, total electron heating attains a value of $M_{Te,tot} \approx 0.05 \approx M_{Ti,tot}$
- σ_w dependent plateau at low β_i, with higher magnetizations giving larger heating efficiency





Energy equipartition

- Achieve by increasing β_i (at fixed σ_w), or by increasing σ_w (at fixed β_i)
- In either case, ratio of ion to elec. skin-depth→1 in the downstream
- In panels (a) and (b), points indicate simulations, lines are fit: $q_{ue,fit} = 0.5 \exp\left[-(1-\beta_i/\beta_{i,max})^{3.3}/(1+1.2\sigma_w^{0.7})\right]$, where $\beta_{i,max} = 1/4\sigma_w$