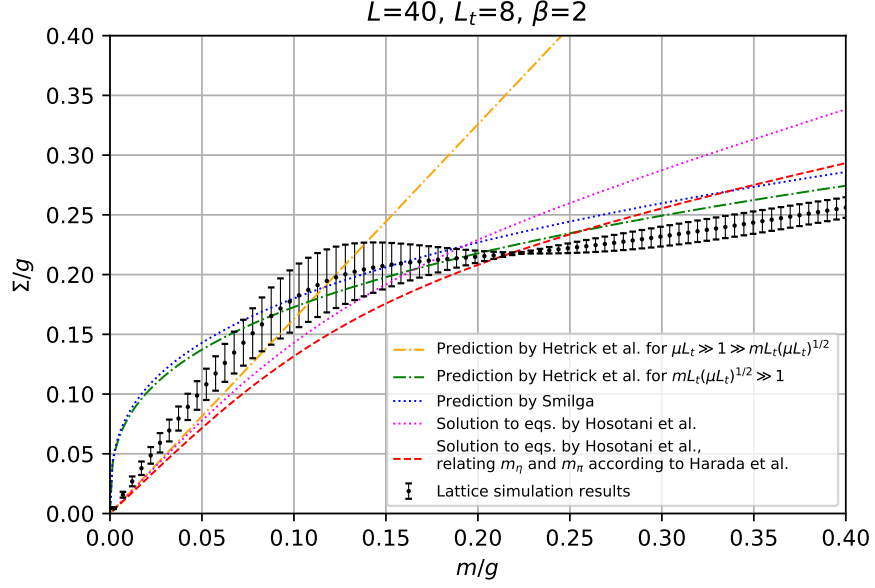


$\langle \bar{\psi} \psi \rangle$  at finite temperature with the overlap operator.

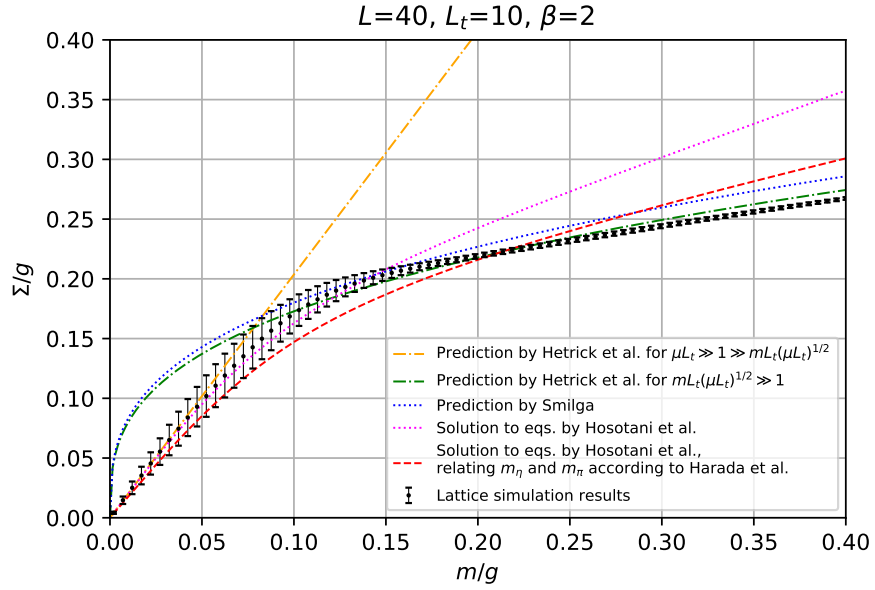
March 17, 2022

# 1 $\beta = 2$

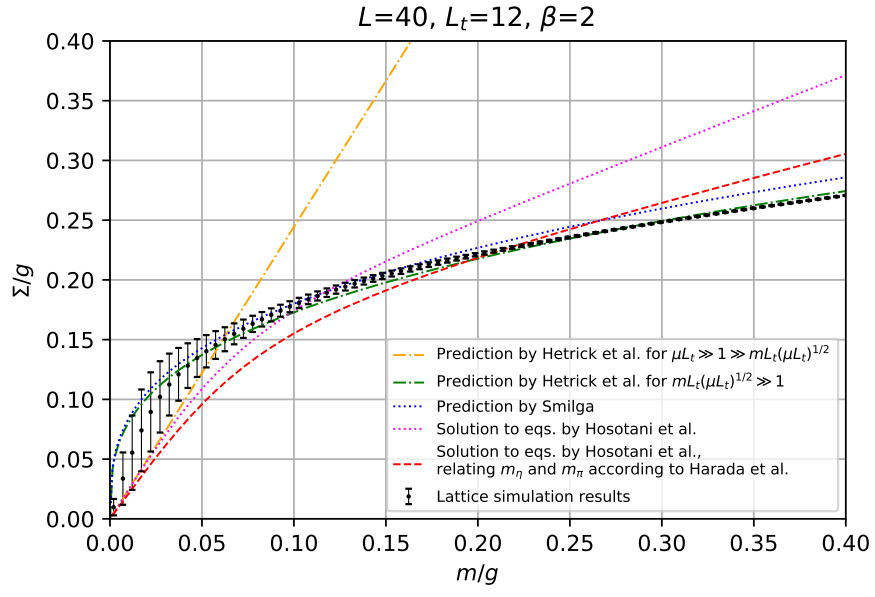
## 1.1 Lattice vs. equations by Hosotani



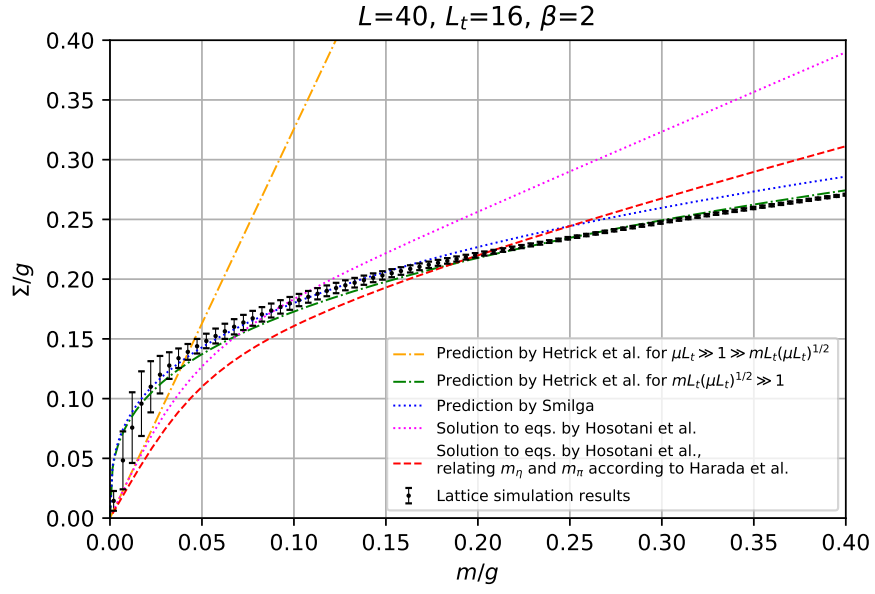
(a)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x8.



(b)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x10.

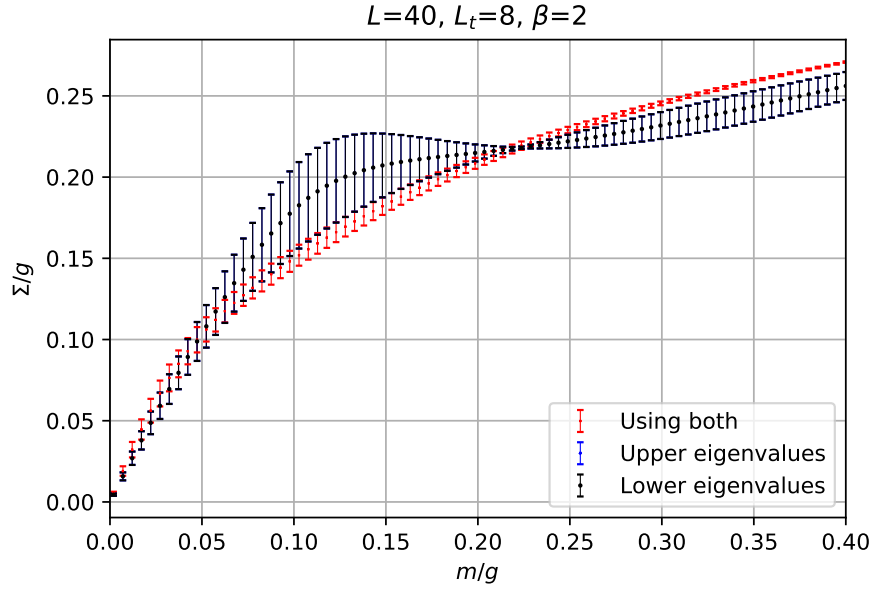


(c)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x12.

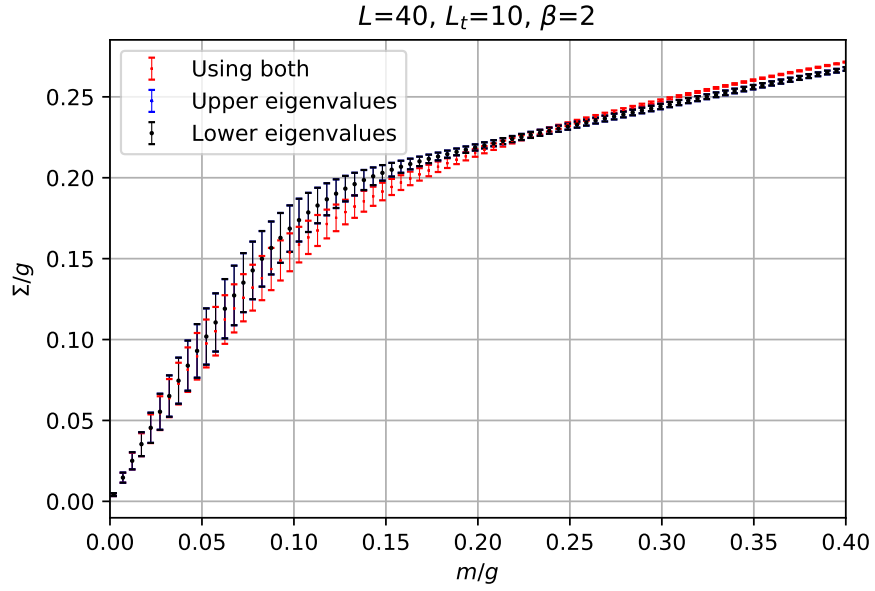


(d)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x16.

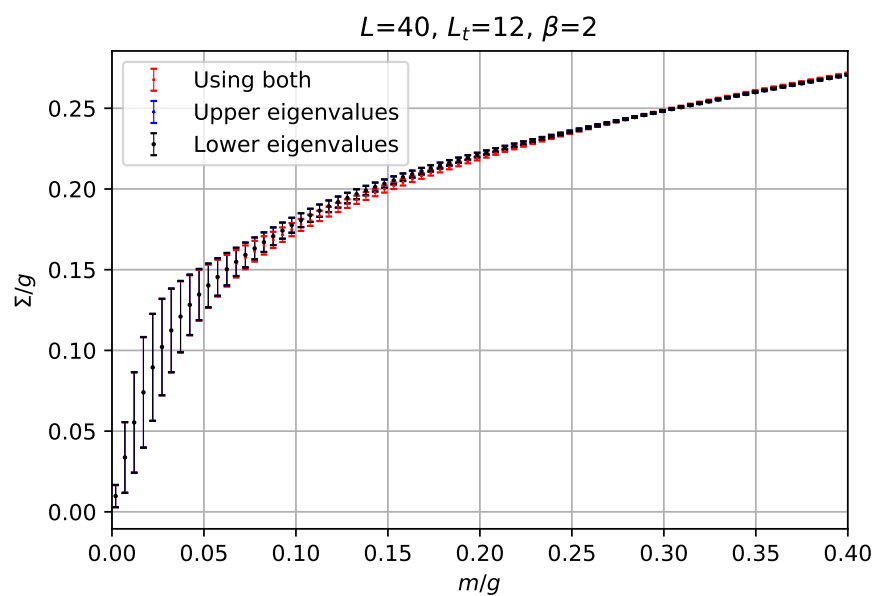
## 1.2 Comparison of $\Sigma$ with the lower and upper half plane eigenvalues.



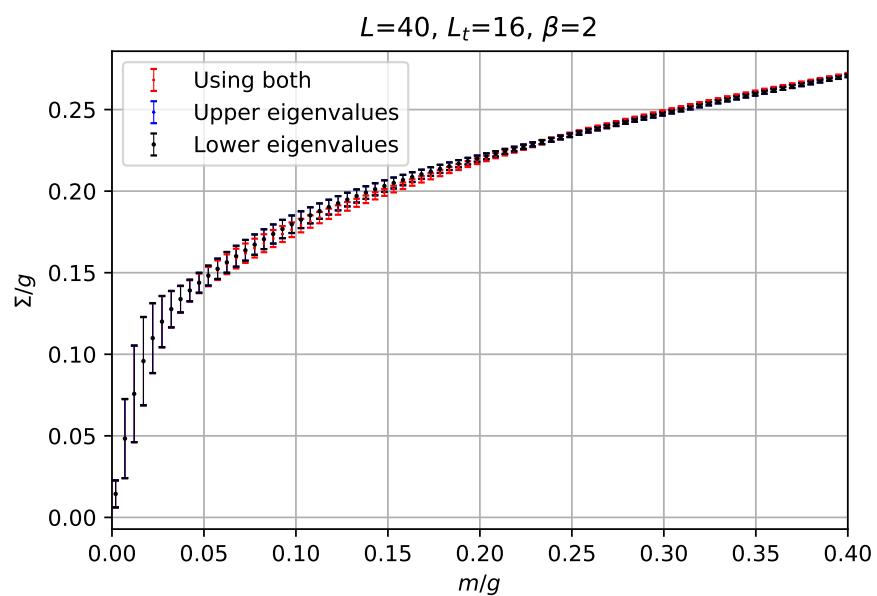
(e)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x8.



(f)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x10.



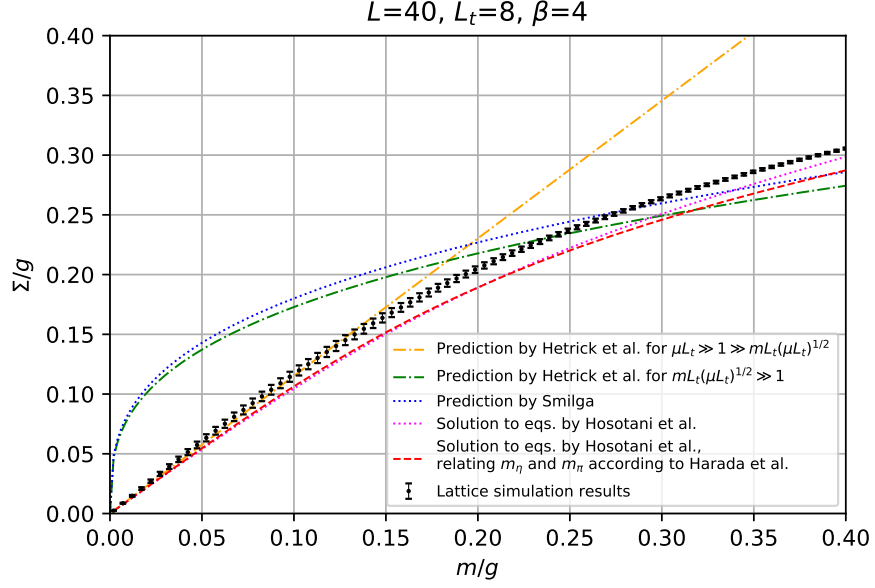
(g)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x12.



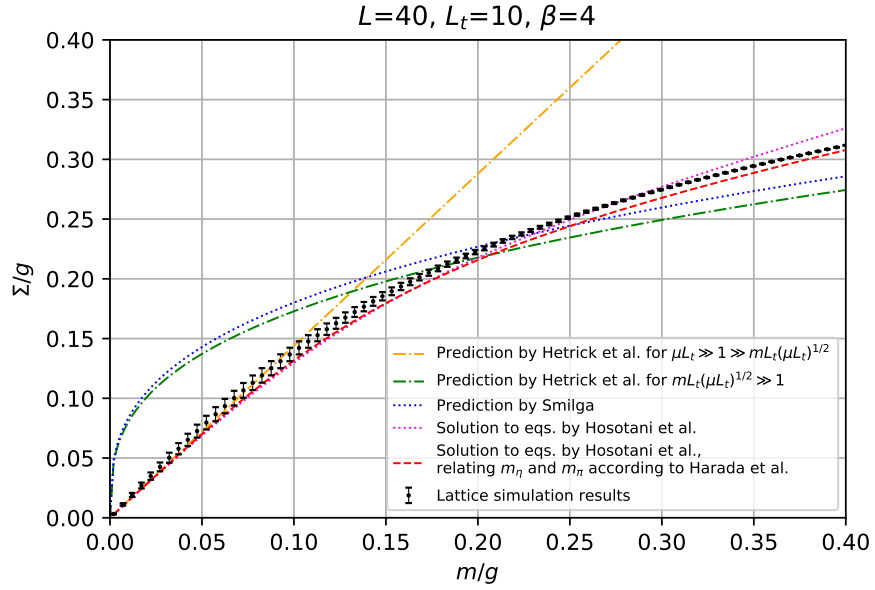
(h)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x16

## 2 $\beta = 4$

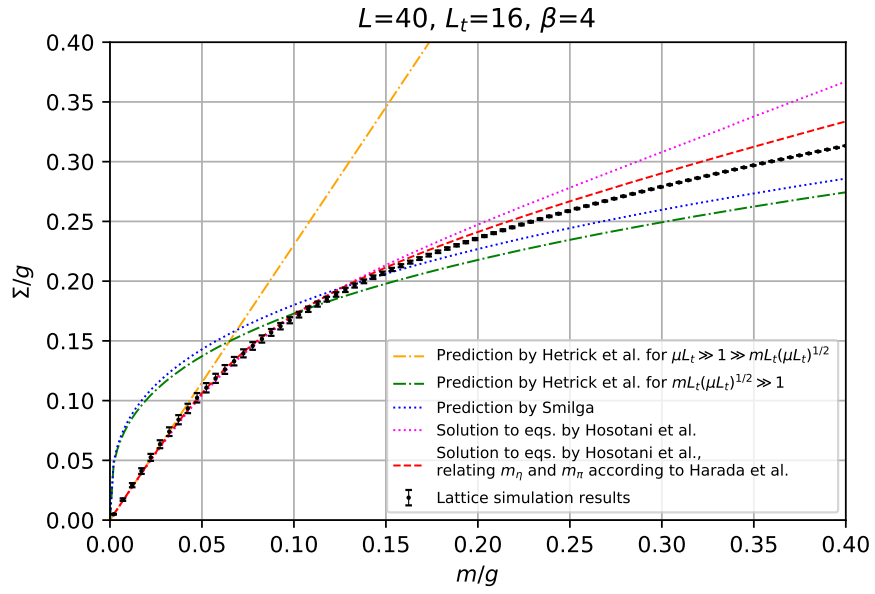
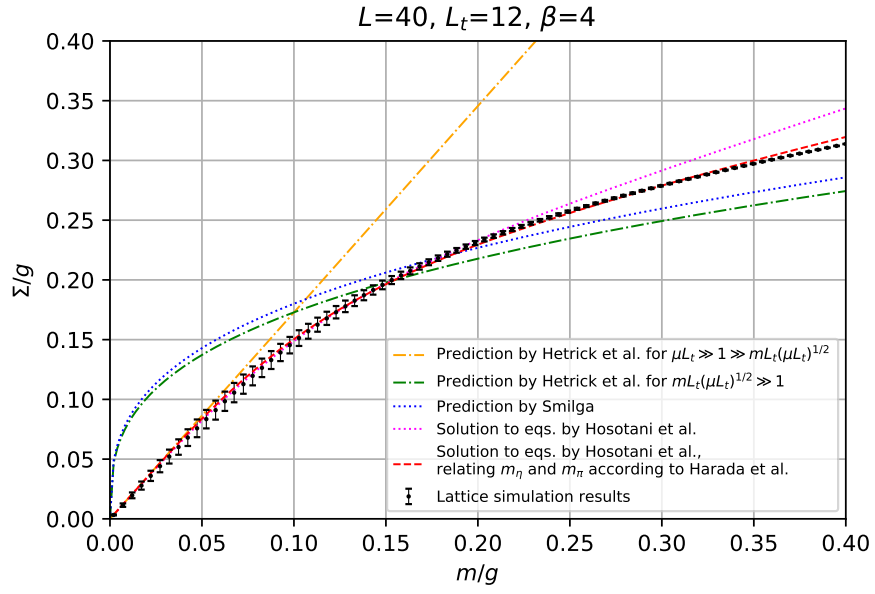
### 2.1 Lattice vs. equations by Hosotani

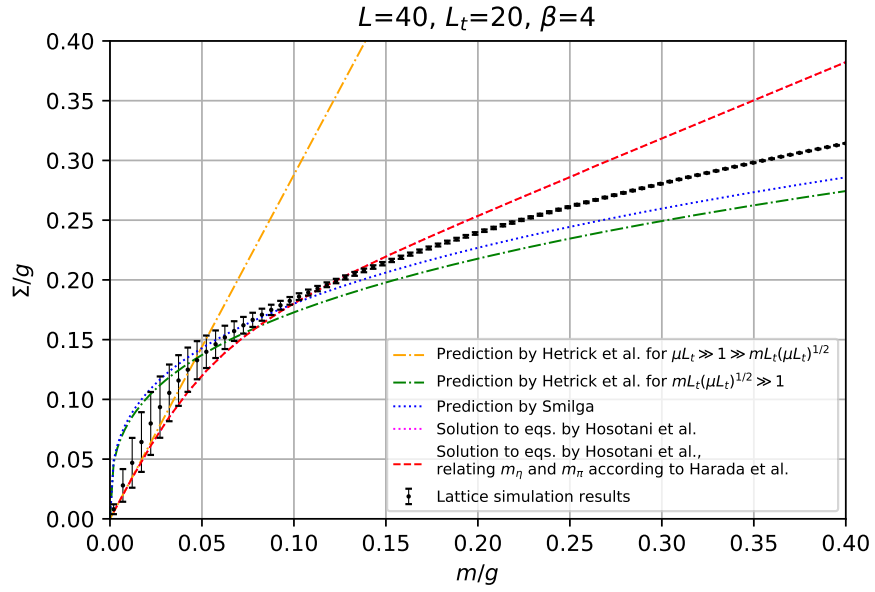


(i)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x8.



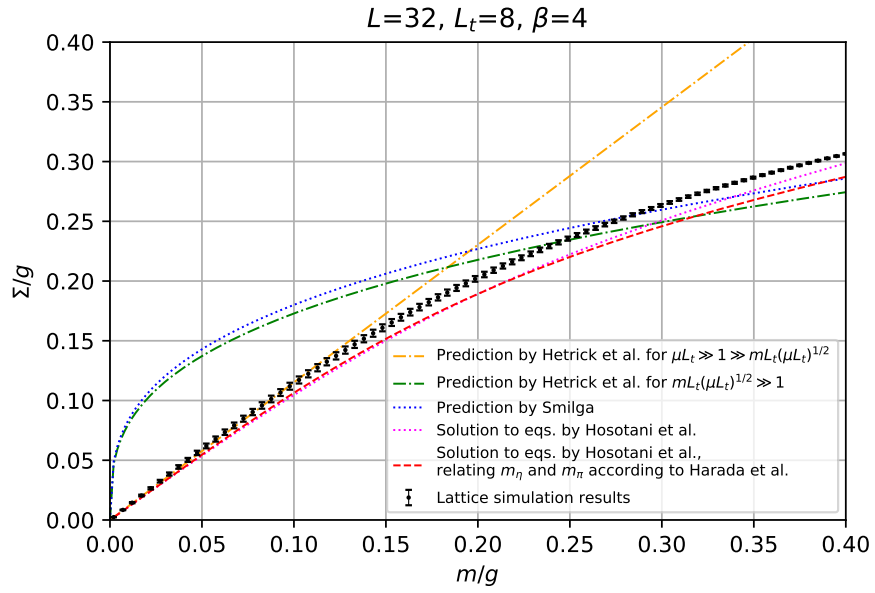
(j)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x10.





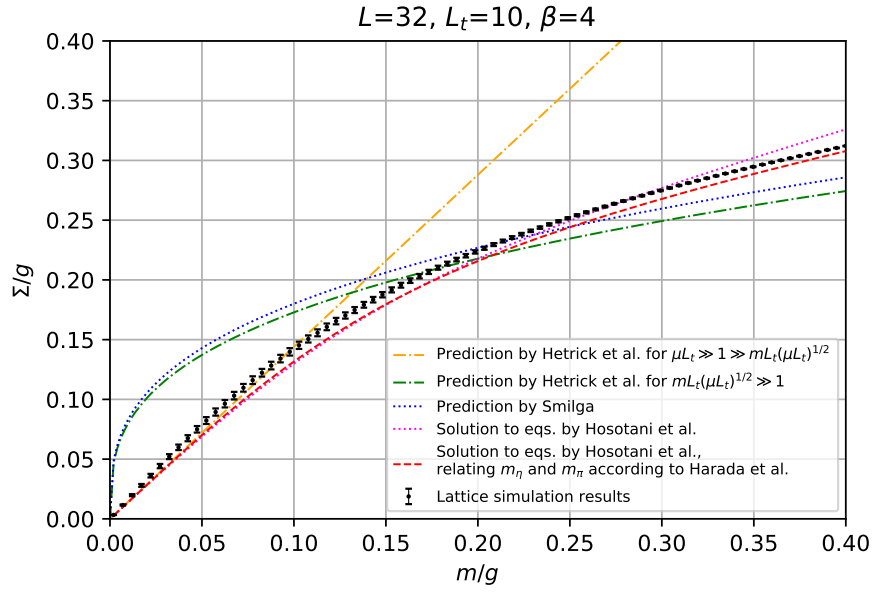
(m)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x20.

Figure 1:  $L = 40$ .

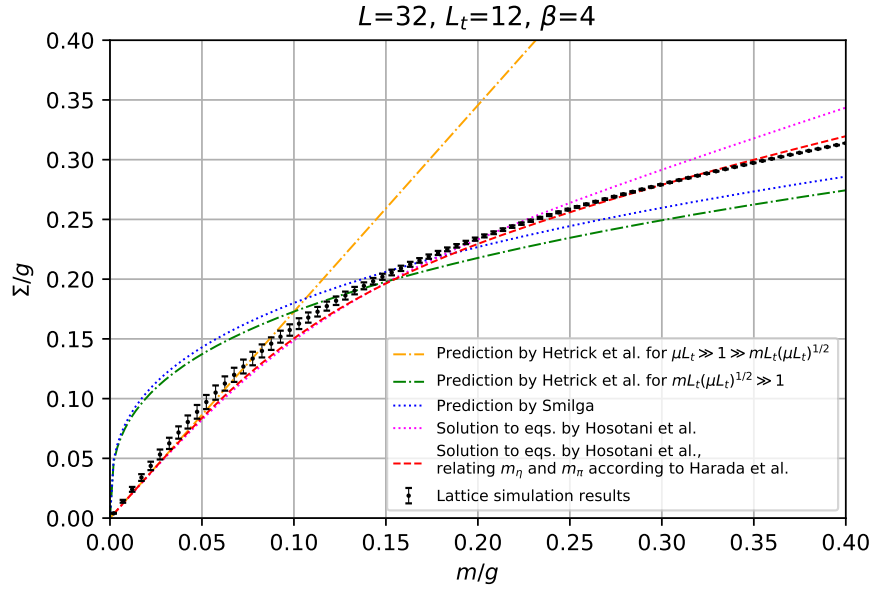


(a)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 32x8.

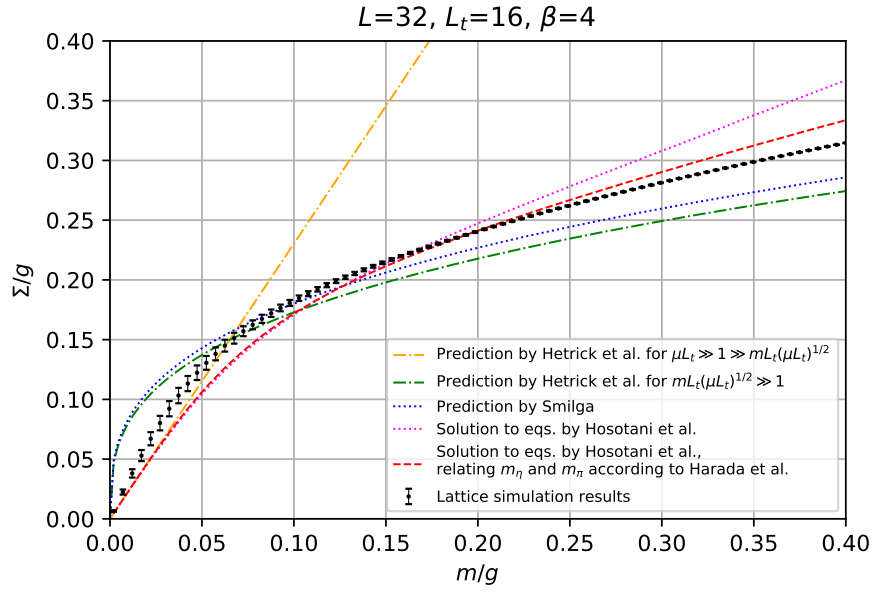




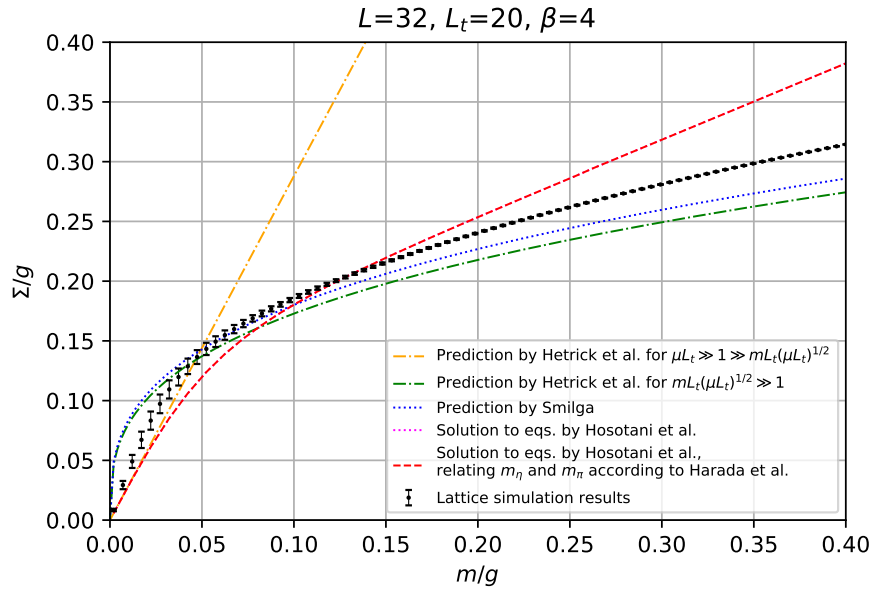
(b)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 32x10.



(c)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 32x12.



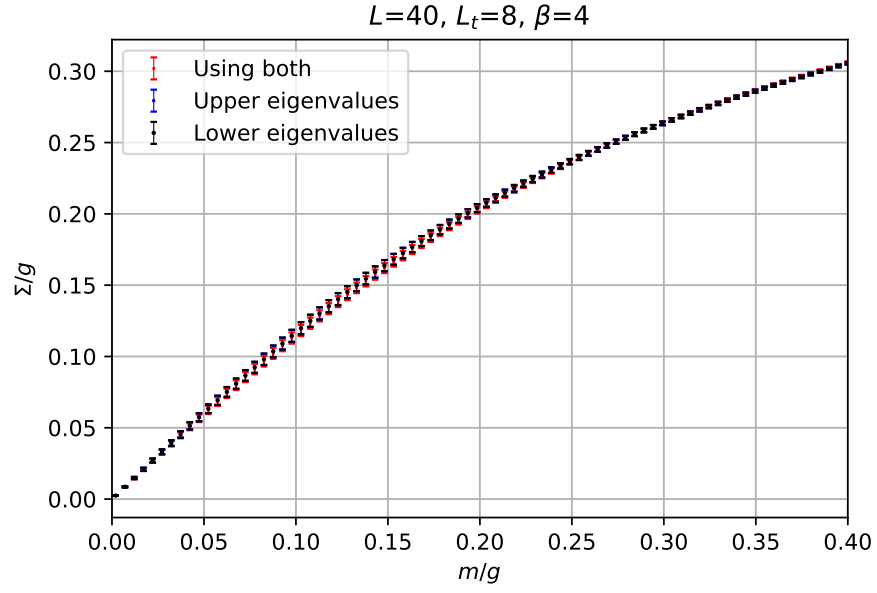
(d)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 32x16.



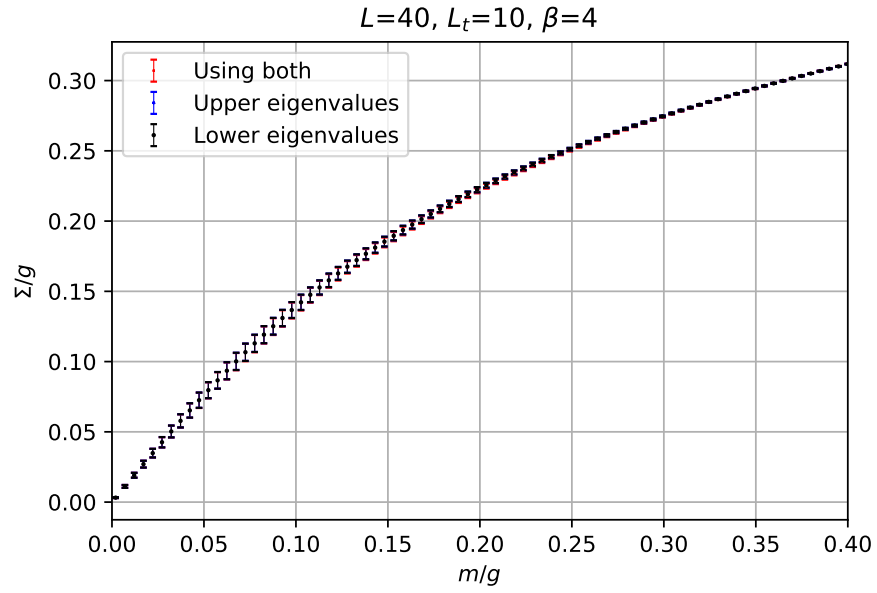
(e)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 32x20.

Figure 2:  $L = 32$ .

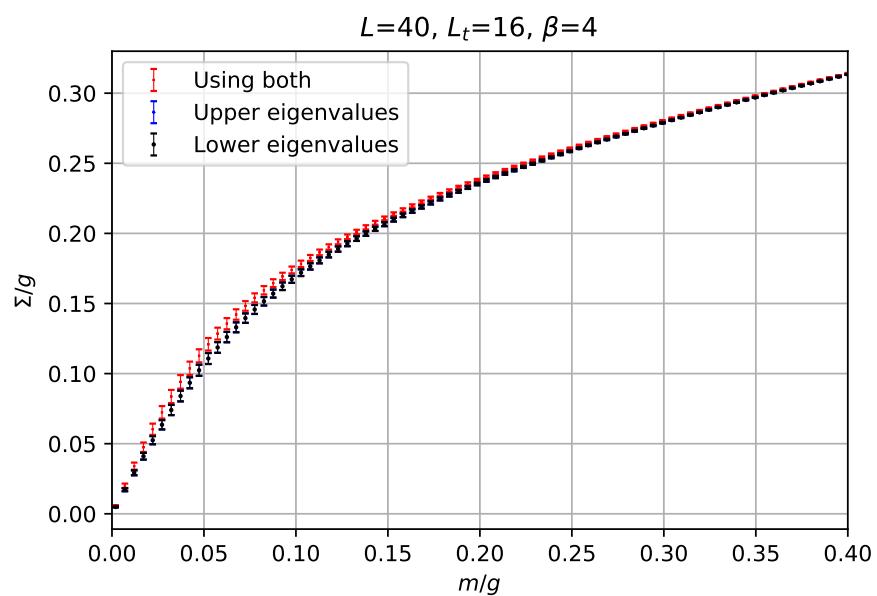
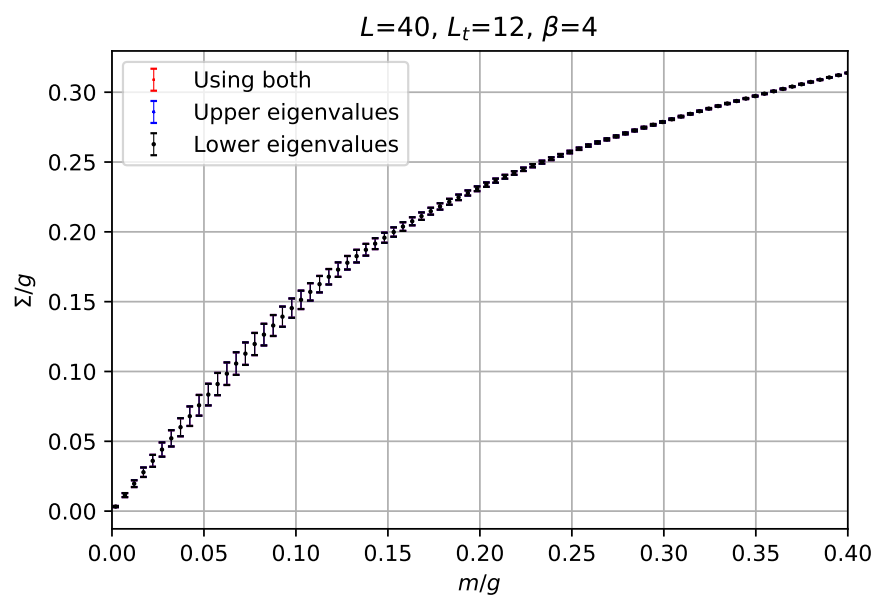
## 2.2 Comparison of $\Sigma$ with the lower and upper half plane eigenvalues.

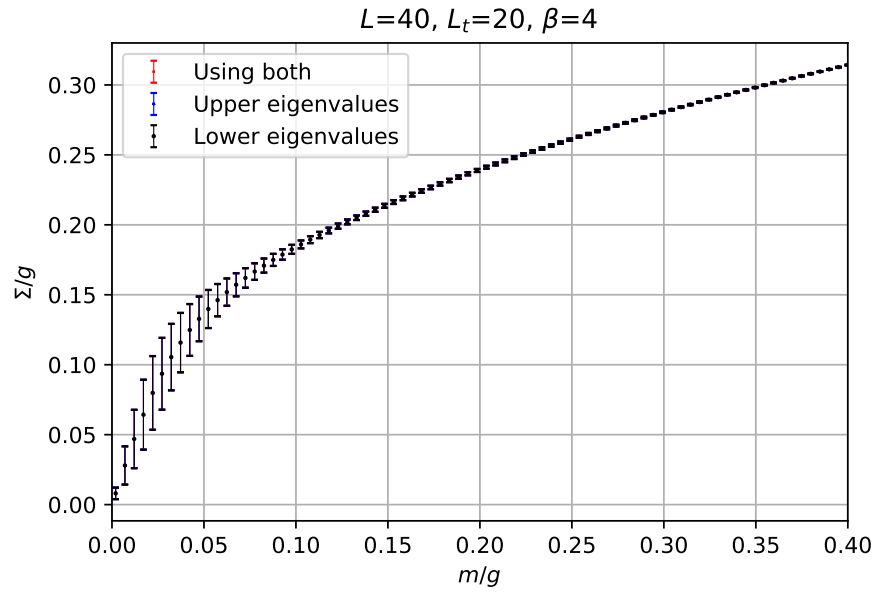


(a)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x8.



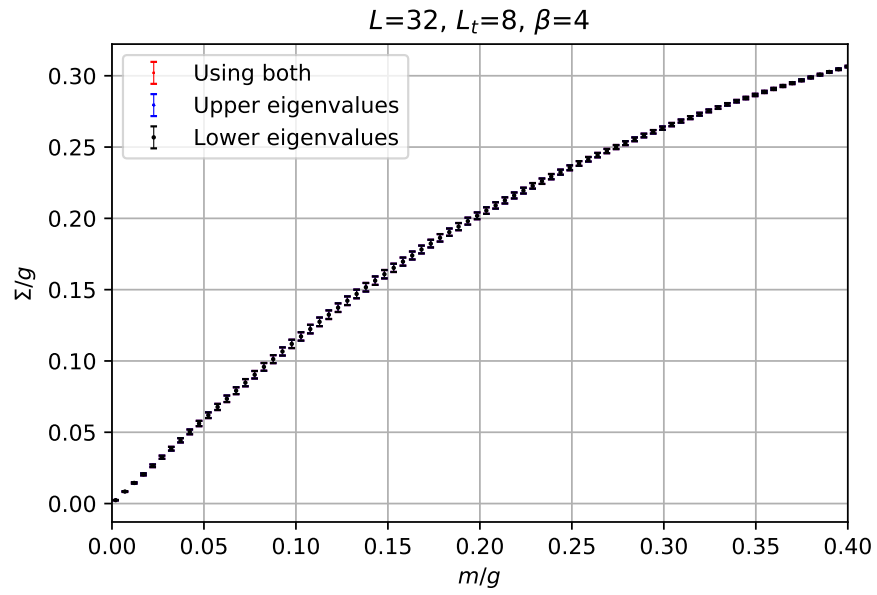
(b)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x10.



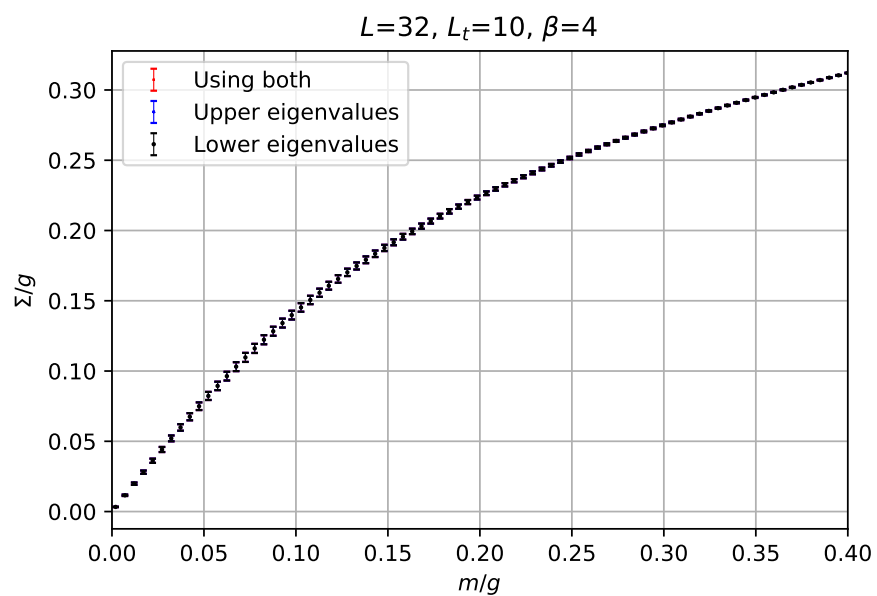


(e)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x20.

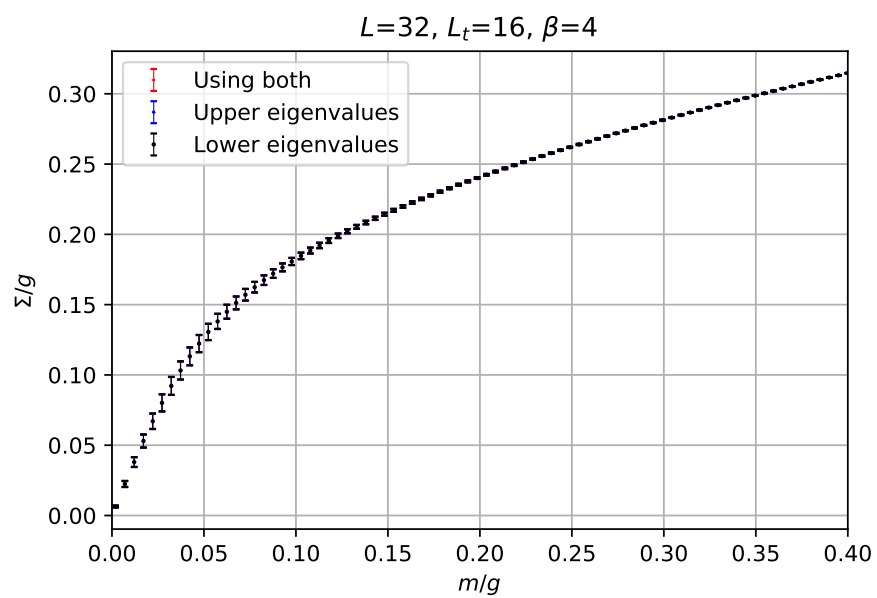
Figure 3:  $L = 40$



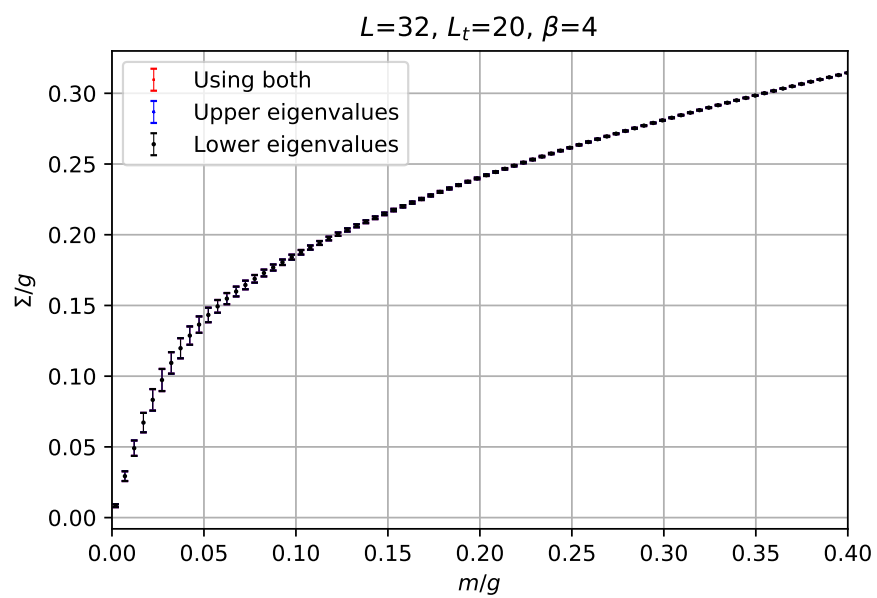
(a)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 32x8.



(b)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 32x10.



(c)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 32x16.

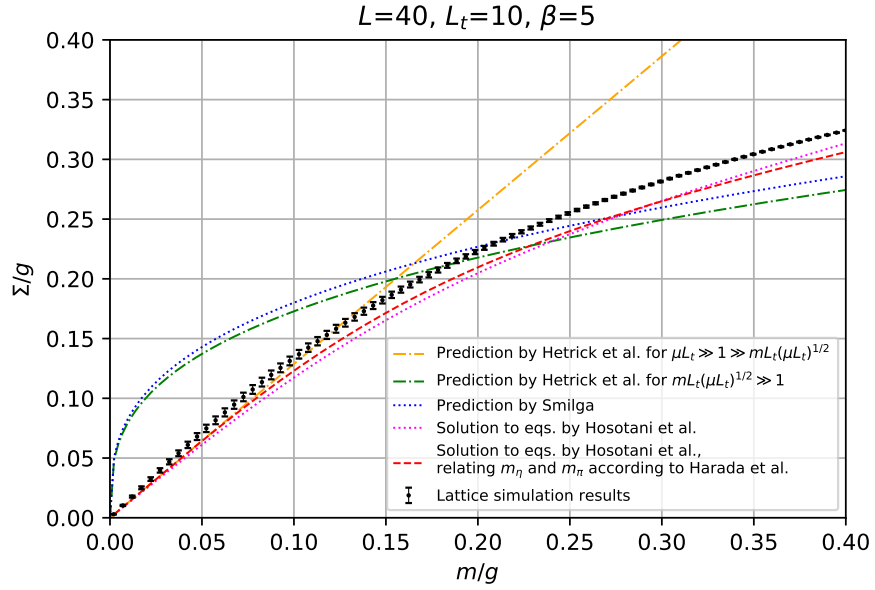
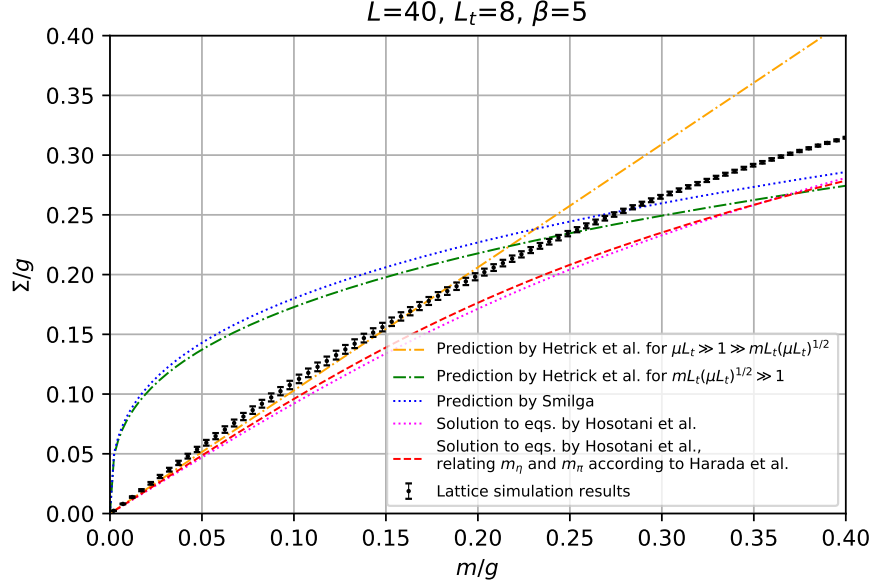


(d)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 32x20.

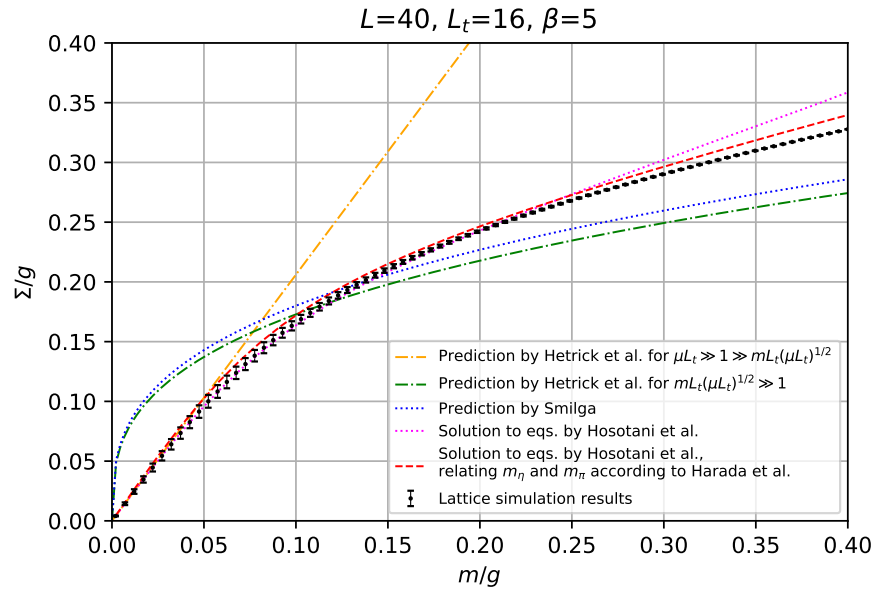
Figure 4:  $L = 32$

### 3 $\beta = 5$

#### 3.1 Lattice vs. equations by Hosotani

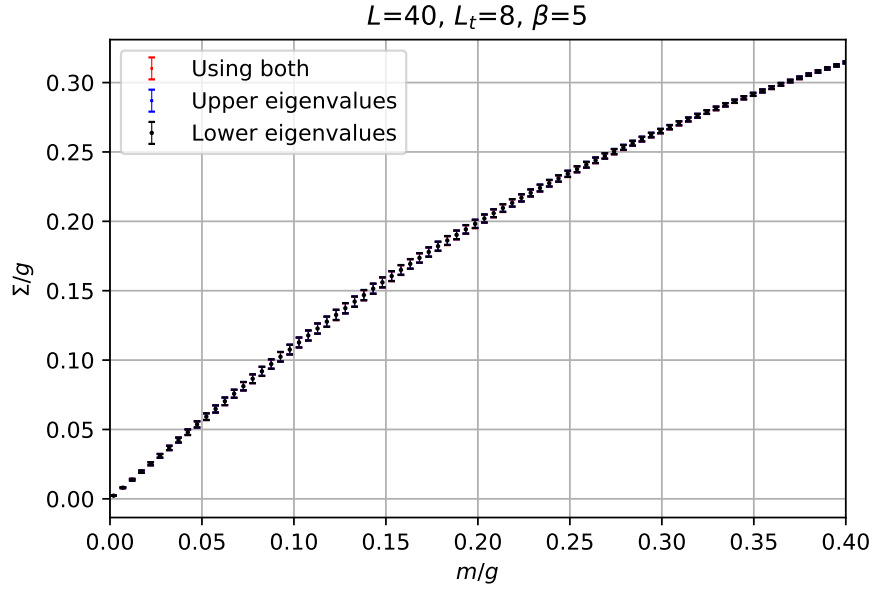




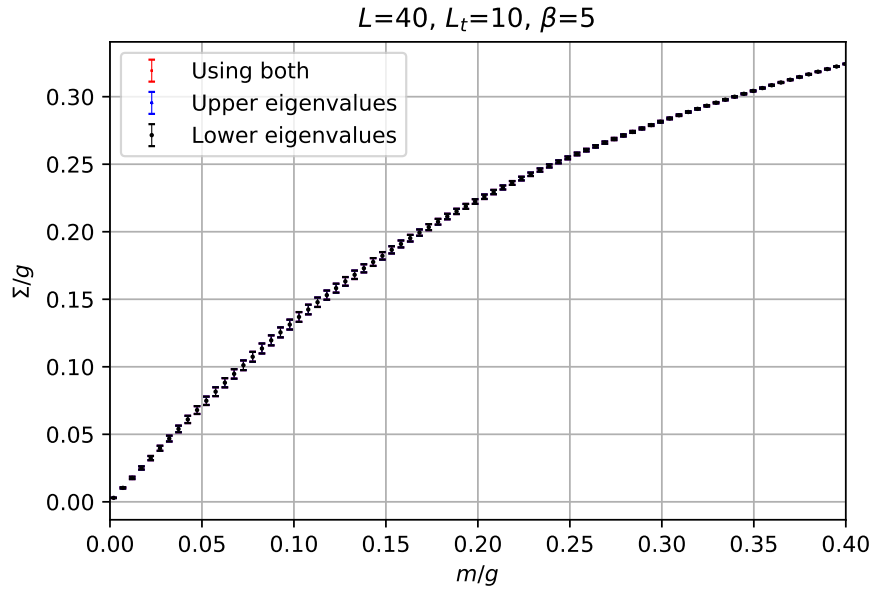


(c)  $\langle \bar{\psi}\psi \rangle$  for a lattice of size 40x16.

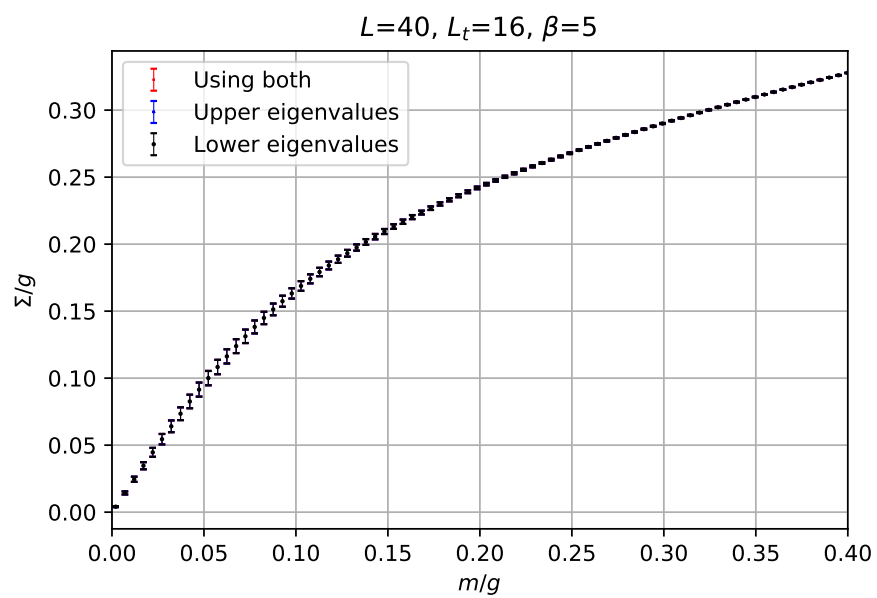
### 3.2 Comparison of $\Sigma$ with the lower and upper half plane eigenvalues.



(d)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x8.



(e)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size 40x10.



(f)  $\langle \bar{\psi} \psi \rangle$  for a lattice of size  $40 \times 16$ .