$$\Gamma = J = 1$$

```
num = 10
```

```
#number of eigen states
num = 10
```

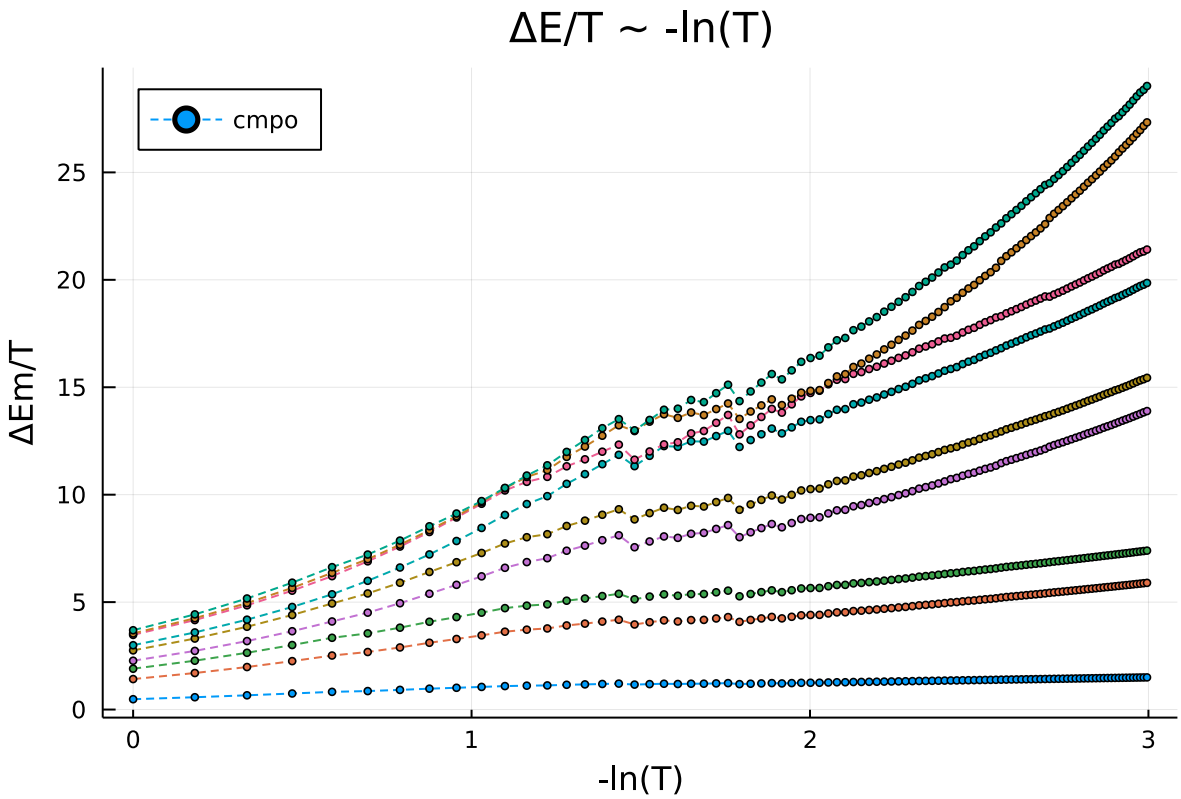
```
beta =
```

```
[1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 4.2, 4.4,
```

```
w =
```

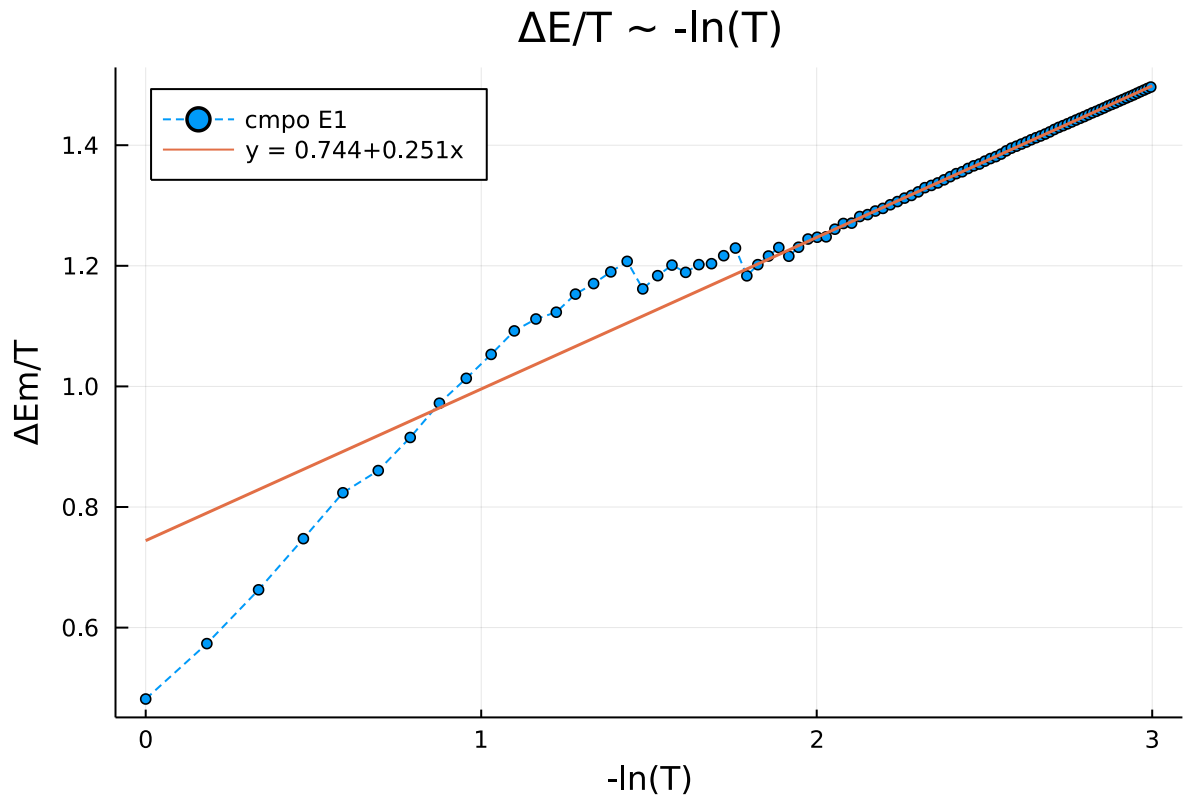
```
cmpo(2×2 Matrix{Float64}:, 2×2 Matrix{Float64}:, 2×2 Matrix{Float64}:, 2×2 Matrix{Floate
      0.0  1.0              1.0   0.0              1.0   0.0              0.0  0.0
      1.0  0.0              0.0  -1.0              0.0  -1.0              0.0  0.0
```

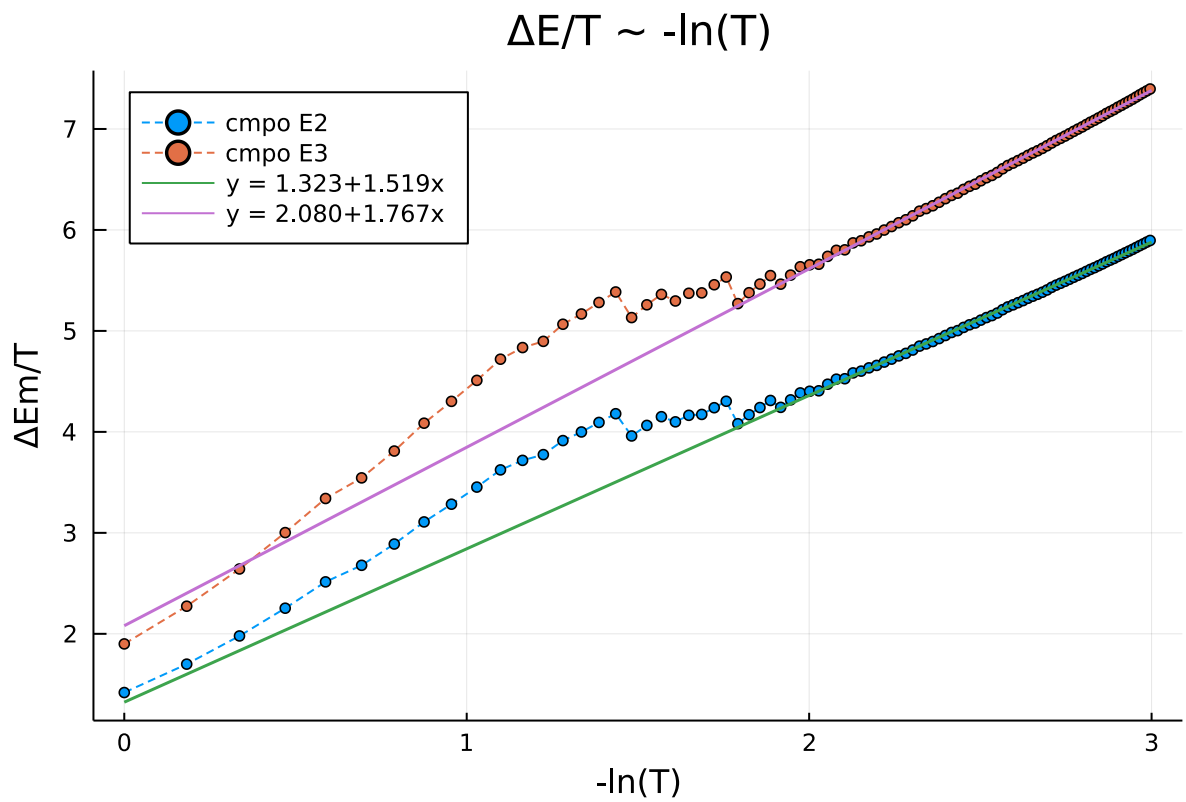
```
"data = ../data/g_1.0.jld"
```

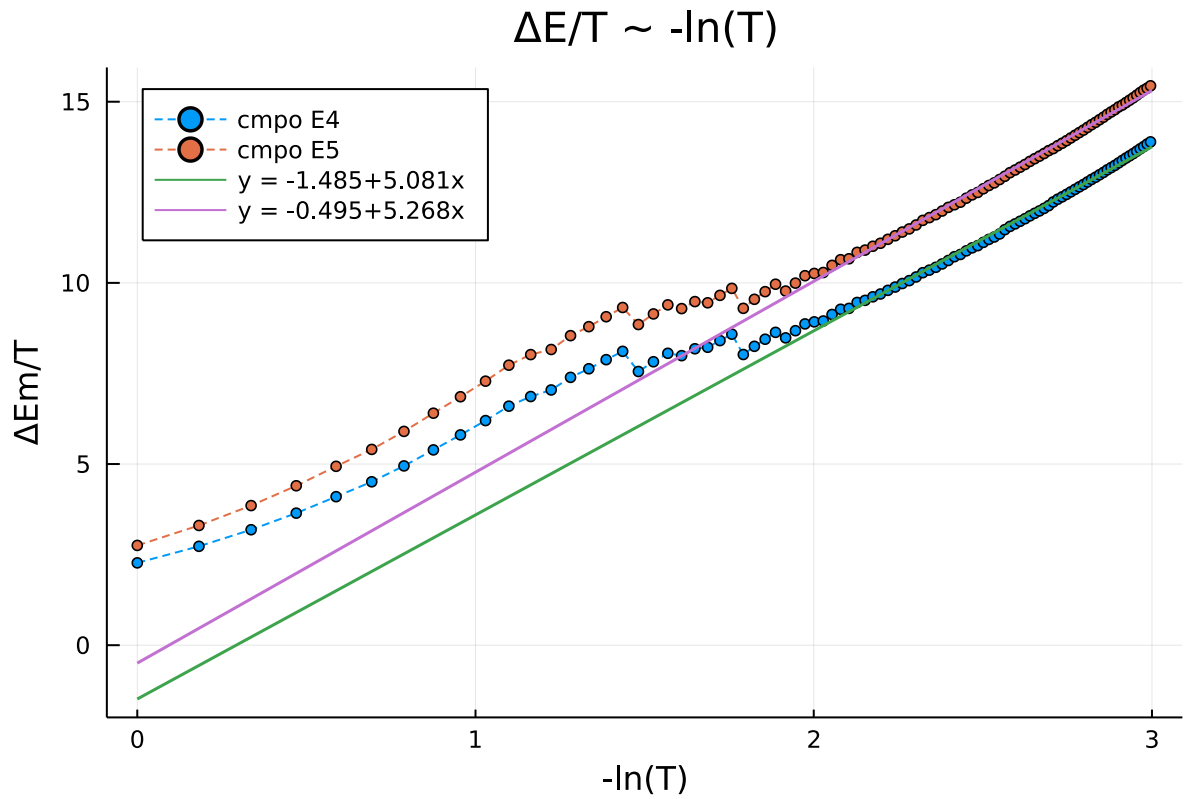


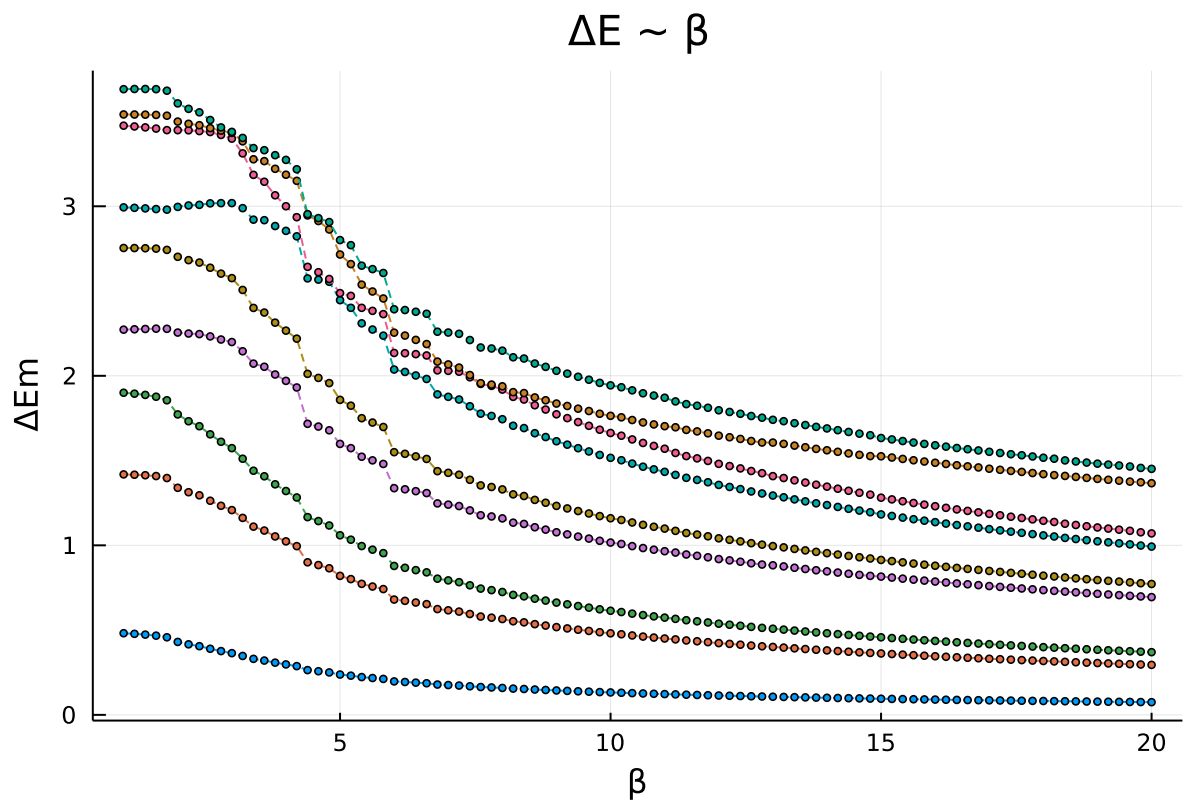

```
linearfit (generic function with 1 method)
```

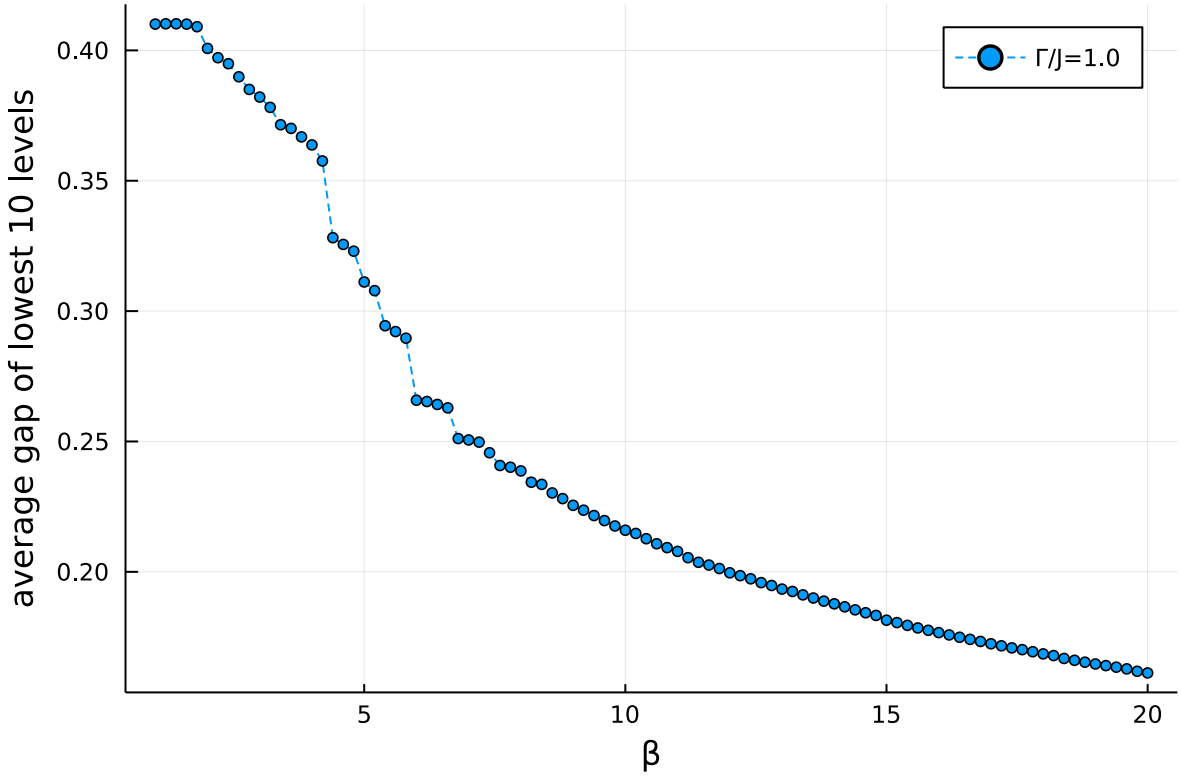
```
addplot_linearfit (generic function with 1 method)
```


ΔE/T ~ -ln(T)
cmpo E1
y = 0.744+0.251x
ΔEm/T
-ln(T)
0.6
0.8
1.0
1.2
1.4
0
1
2
3

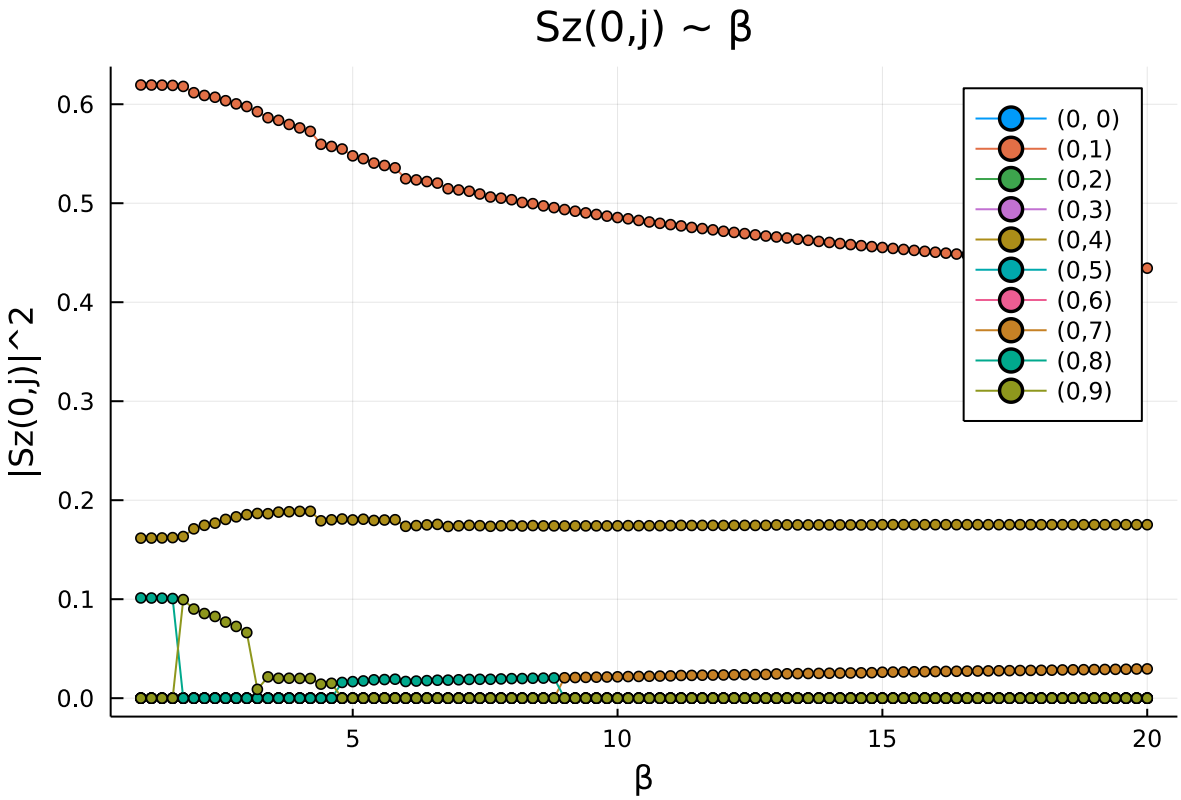

ΔE/T ~ -ln(T)
cmpo E2
cmpo E3
y = 1.323+1.519x
y = 2.080+1.767x
ΔEm/T
-ln(T)
2
3
4
5
6
7
0
1
2
3

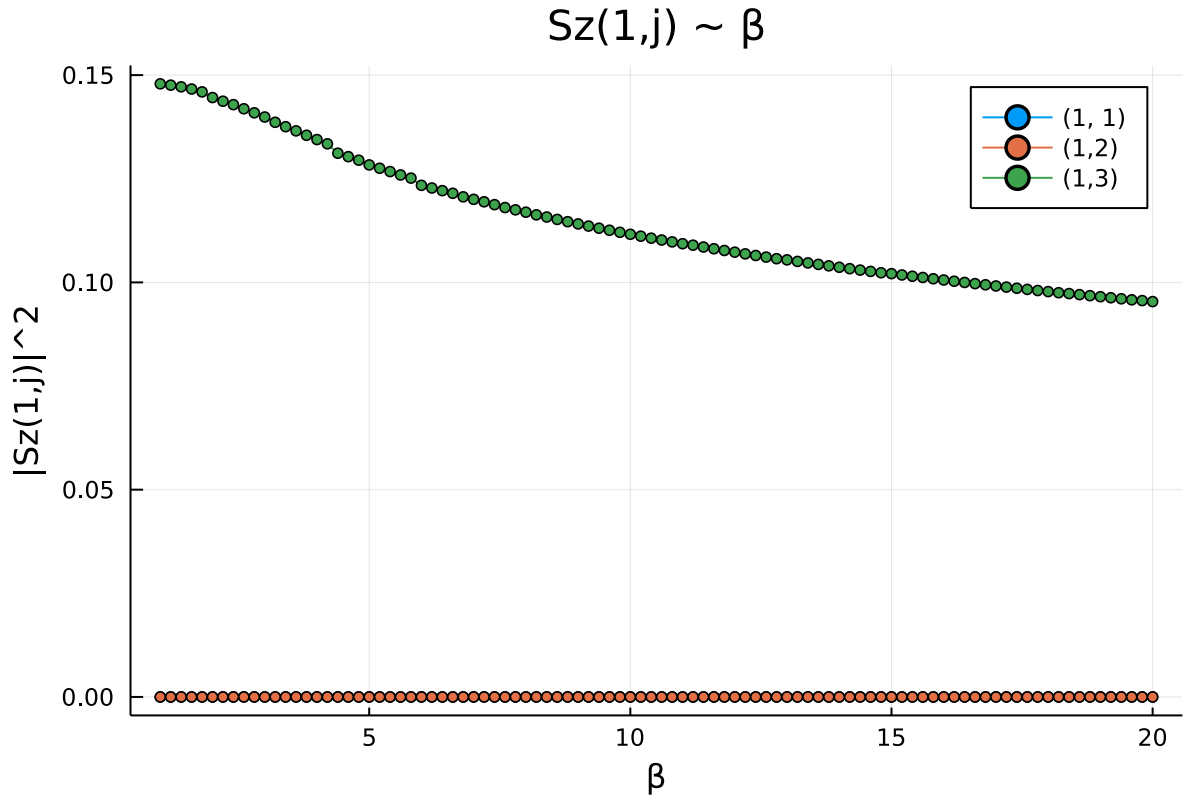

ΔE/T ~ -ln(T)
cmpo E4
cmpo E5
y = -1.485+5.081x
y = -0.495+5.268x
ΔEm/T
-ln(T)
0
5
10
15
0
1
2
3

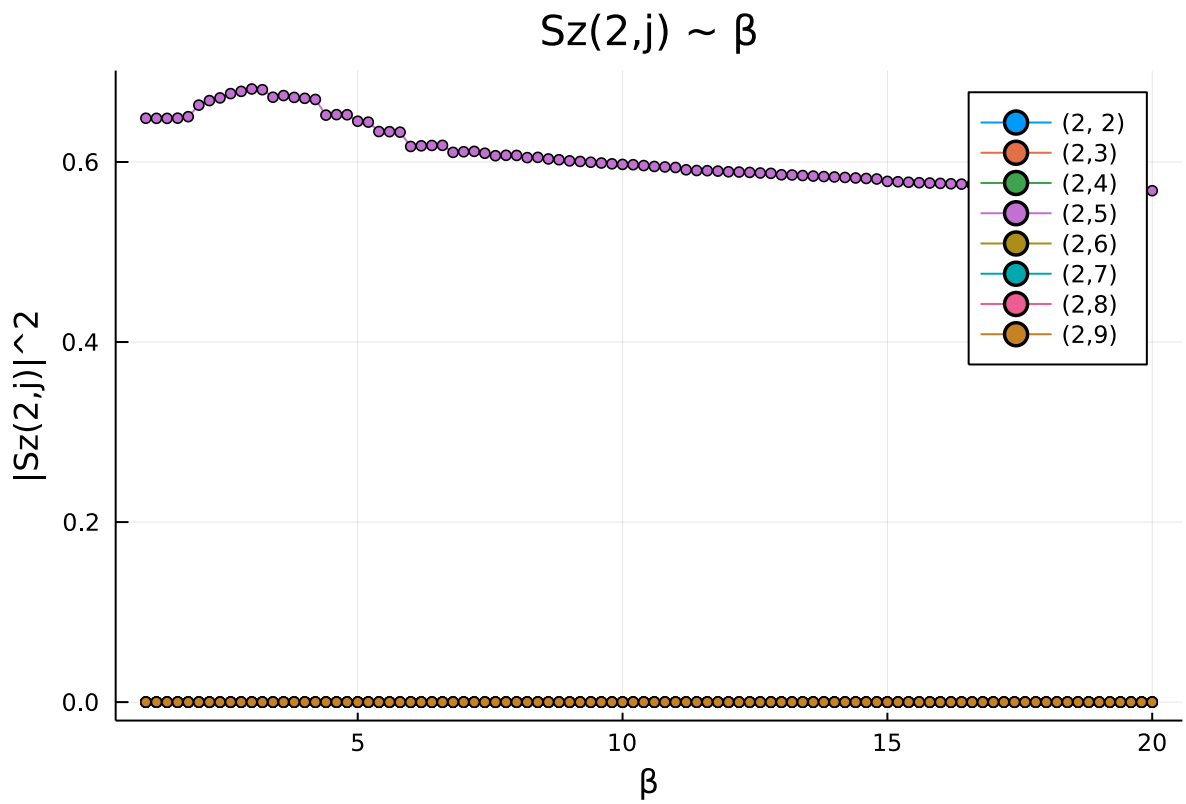

ΔE ~ β
ΔEm
β
0
1
2
3
5
10
15
20

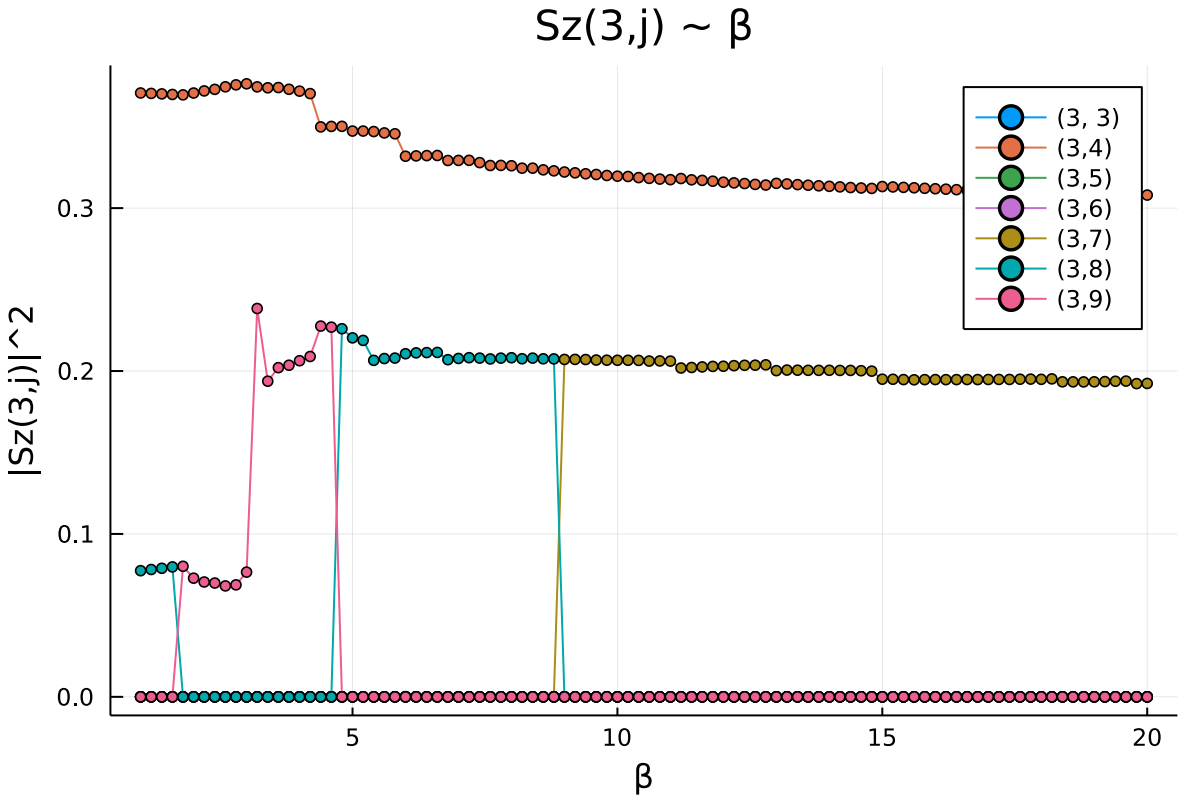


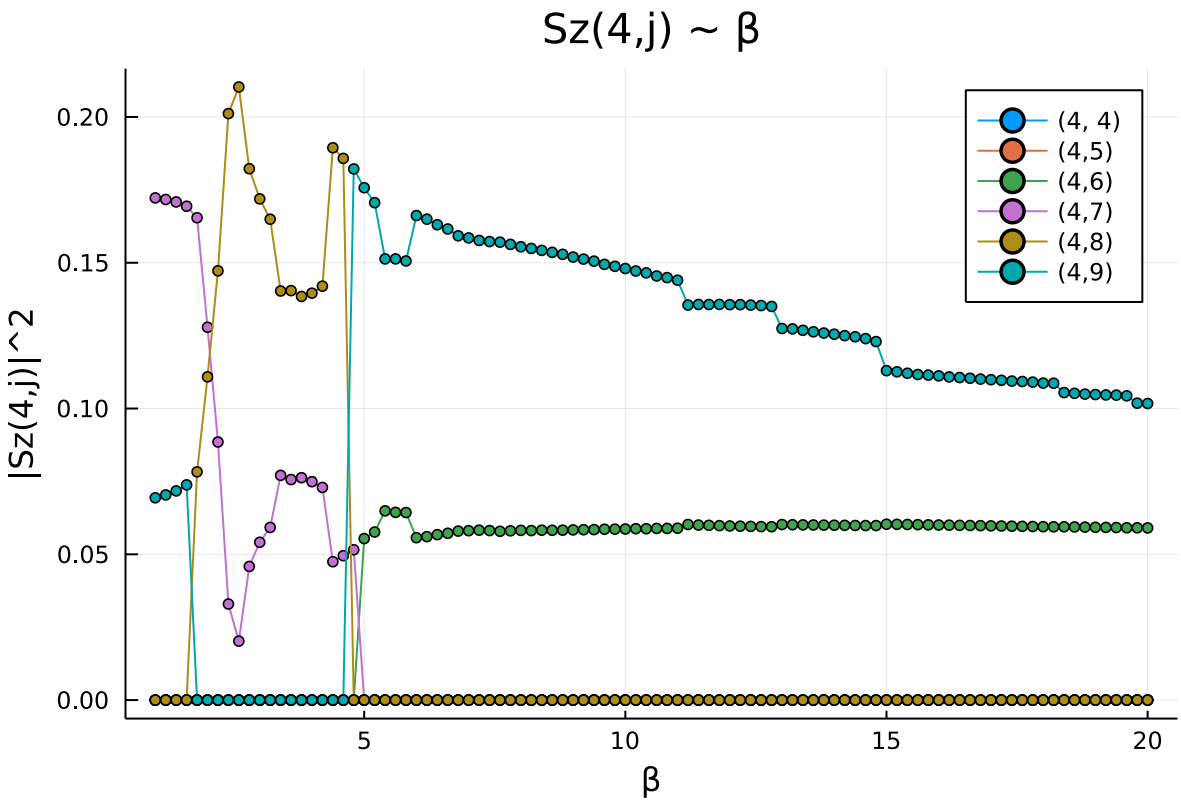

```
plot_sz (generic function with 1 method)
```

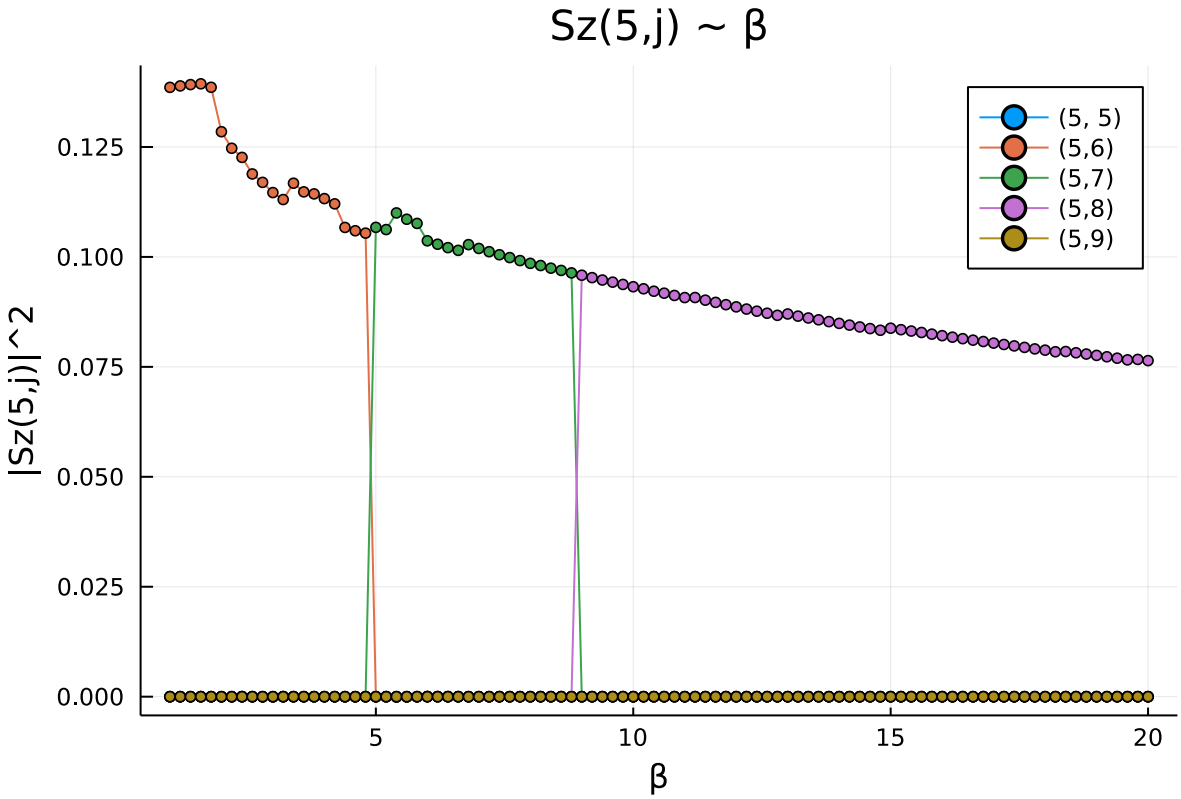



Sz(1,j) ~ β
|Sz(1,j)|^2
β
0.15
0.10
0.05
0.00
5
10
15
20
(1, 1)
(1,2)
(1,3)


Sz(2,j) ~ β
|Sz(2,j)|^2
β
0.6
0.4
0.2
0.0
5
10
15
20
(2, 2)
(2,3)
(2,4)
(2,5)
(2,6)
(2,7)
(2,8)
(2,9)


Sz(3,j) ~ β
|Sz(3,j)|^2
β
(3, 3)
(3,4)
(3,5)
(3,6)
(3,7)
(3,8)
(3,9)
0.0
0.1
0.2
0.3
5
10
15
20


Sz(4,j) ~ β
|Sz(4,j)|^2
β
(4, 4)
(4,5)
(4,6)
(4,7)
(4,8)
(4,9)
0.00
0.05
0.10
0.15
0.20
5
10
15
20




```
"define pauli z"
```