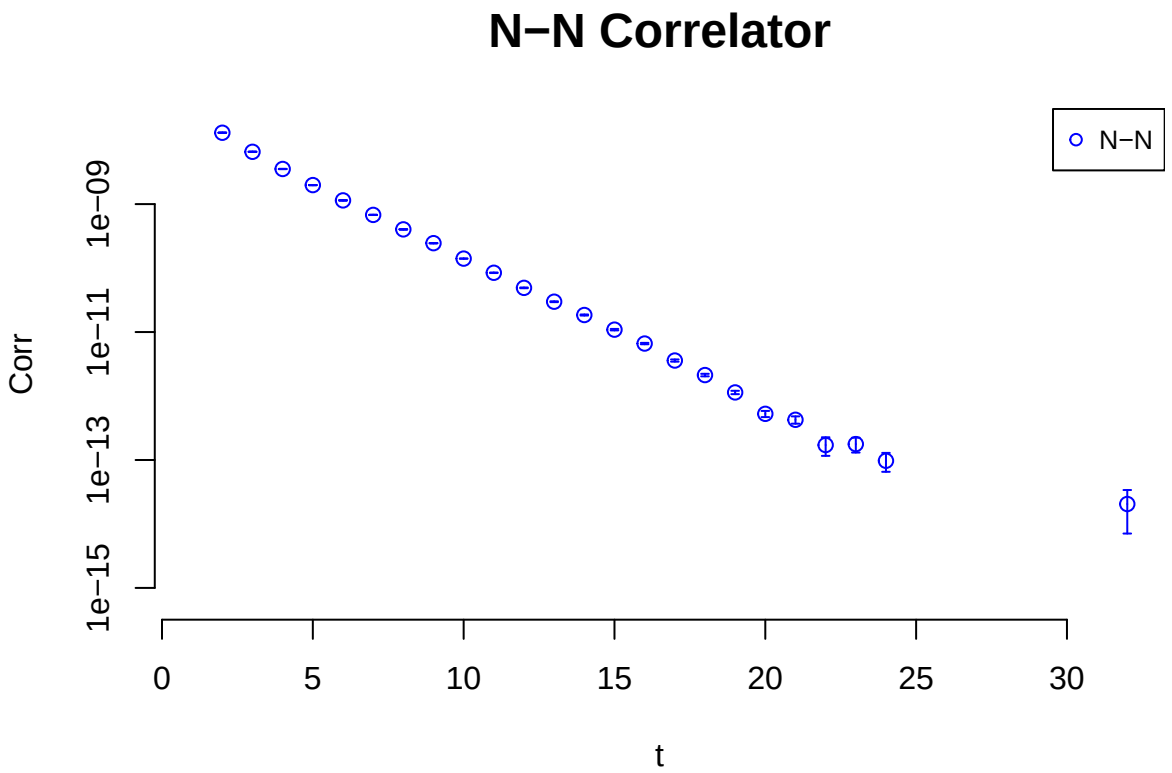
NJN-Korrelatoren

Timo Beilschmidt

November 22, 2019

NN-Correlator

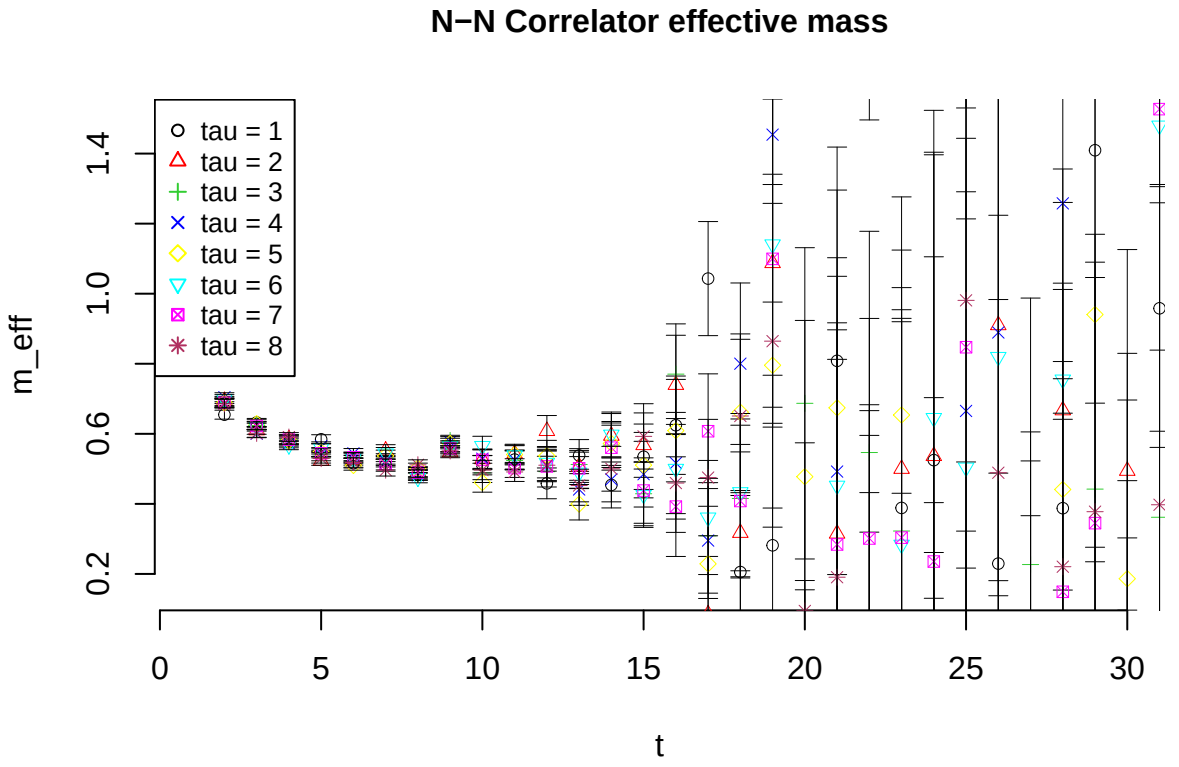
```
## [1] "N-N, T=64, n_src=16, n_conf=21, Gi = Gi_Cg5gt, Gf = Gf_Cg5gt"
## [1] "Symmetrized:"
##  [1] -4.708350e-09  1.305098e-08  6.569555e-09  3.538042e-09  1.982000e-09
##  [6]  1.142862e-09  6.778049e-10  4.025368e-10  2.449725e-10  1.405400e-10
## [11]  8.443264e-11  4.907192e-11  2.979242e-11  1.846732e-11  1.089940e-11
## [16]  6.607498e-12  3.588287e-12  2.126326e-12  1.137578e-12  5.266242e-13
## [21]  4.250823e-13  1.712523e-13  1.771039e-13  9.718620e-14 -1.198043e-13
## [26] -5.592105e-14 -5.229954e-14 -1.689740e-13 -1.198923e-13 -7.208910e-14
## [31] -8.945716e-14  2.049771e-14 -2.034696e-14  9.056771e-15 -7.687614e-14
## [36] -3.958282e-14 -7.012861e-14 -3.884705e-14 -6.804774e-14 -6.746612e-14
## [41]  3.898755e-14  6.365926e-14  9.322851e-15 -2.762942e-14 -8.601200e-14
## [46] -1.452180e-13 -1.871396e-13 -3.289259e-14 -2.823841e-13 -4.006290e-13
## [51] -3.880908e-13 -2.086896e-13  1.813478e-13  1.220731e-12  3.503563e-12
## [56]  6.479797e-12  1.405168e-11  2.825855e-11  6.353685e-11  1.454782e-10
## [61]  3.474850e-10  8.882808e-10  2.532340e-09  1.541207e-08
```



Effective Mass

We calculate the effective mass following https://arxiv.org/abs/1612.06963.

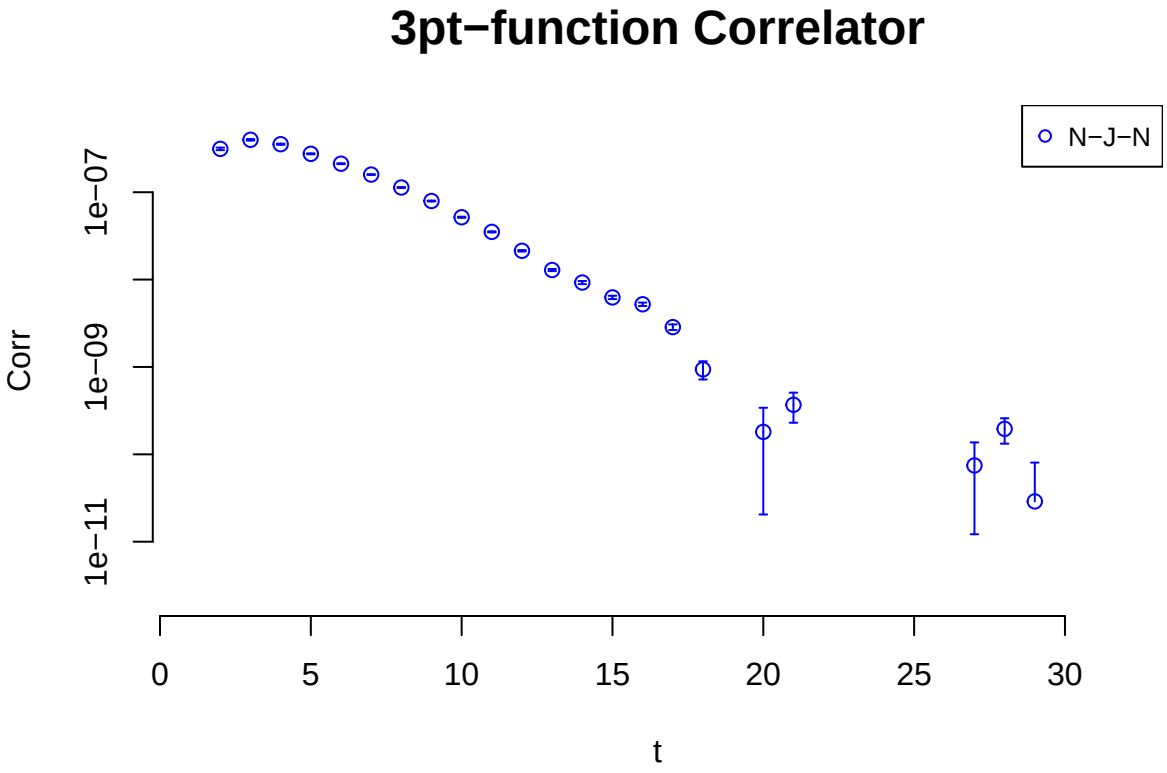
$m^{eff}(t,\tau) = \frac{1}{\tau} ln\left(\frac{C(t)}{C(t+\tau)}\right) \rightarrow_{t\rightarrow\infty} \frac{1}{\tau} ln(e^{E_0 \tau}) = E_0$



NJN-Correlator

First the 3pt-function correlator:

```
## [1] "N-J-N, T=64, n_src=16, n_conf=21, Gi = Gi_Cg5gt, Gf = Gf_Cg5gt"
## [1] "Symmetrized:"
##  [1] -2.230108e-07  3.132001e-07  3.978297e-07  3.541060e-07  2.748987e-07
##  [6]  2.119576e-07  1.590388e-07  1.131491e-07  7.927493e-08  5.167417e-08
## [11]  3.513028e-08  2.134627e-08  1.286371e-08  9.254346e-09  6.248972e-09
## [16]  5.215286e-09  2.857919e-09  9.387104e-10 -1.652917e-10  1.806969e-10
## [21]  3.689061e-10 -2.765889e-10 -1.616373e-10 -1.659196e-10 -5.377849e-11
## [26] -6.703233e-11  7.456823e-11  1.955665e-10  2.891727e-11 -8.089302e-11
## [31] -9.234186e-11 -1.029919e-10 -2.197488e-11  8.856035e-11 -3.690189e-12
## [36] -4.227806e-11  2.225603e-10 -8.158399e-11 -2.708275e-11 -1.735715e-10
## [41] -1.692342e-10 -2.112079e-10  2.171119e-12  1.614816e-11 -5.015825e-11
## [46] -1.839265e-10 -1.231615e-09  4.375019e-10 -3.997718e-10 -3.023087e-10
## [51] -9.436158e-10 -7.506758e-10 -1.923738e-10  1.038465e-09  2.672220e-09
## [56]  6.628242e-09  1.279783e-08  1.999198e-08  3.441548e-08  6.022194e-08
## [61]  1.037392e-07  1.887322e-07  3.646831e-07  5.833278e-07
```



Ratio-Plot

$$\left.\frac{\partial m_\lambda^{eff}(t,\tau)}{\partial\lambda}\right|_{\lambda=0} = \frac{1}{\tau}\left(\frac{\partial_\lambda C_\lambda(t)}{C(t)} - \frac{\partial_\lambda C_\lambda(t+\tau)}{C(t+\tau)}\right)_{\lambda=0}$$