

8/8 (Tue)

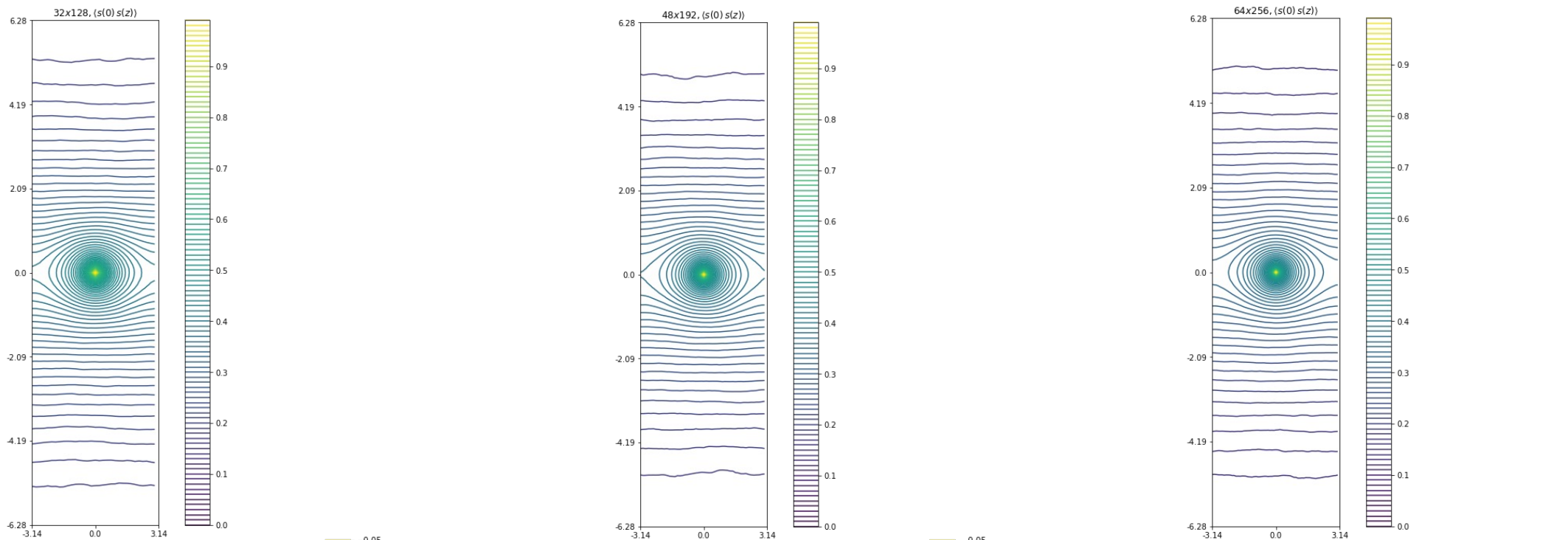
What is addressed below:

- Critical 2D Ising model, uniform coupling on square lattice ( $K_1 = K_2; K_3 = 0$ )
- Volume = 32x128, 48x192, 64x256
- Check UV & IR behaviors of spin-spin and energy-energy correlators

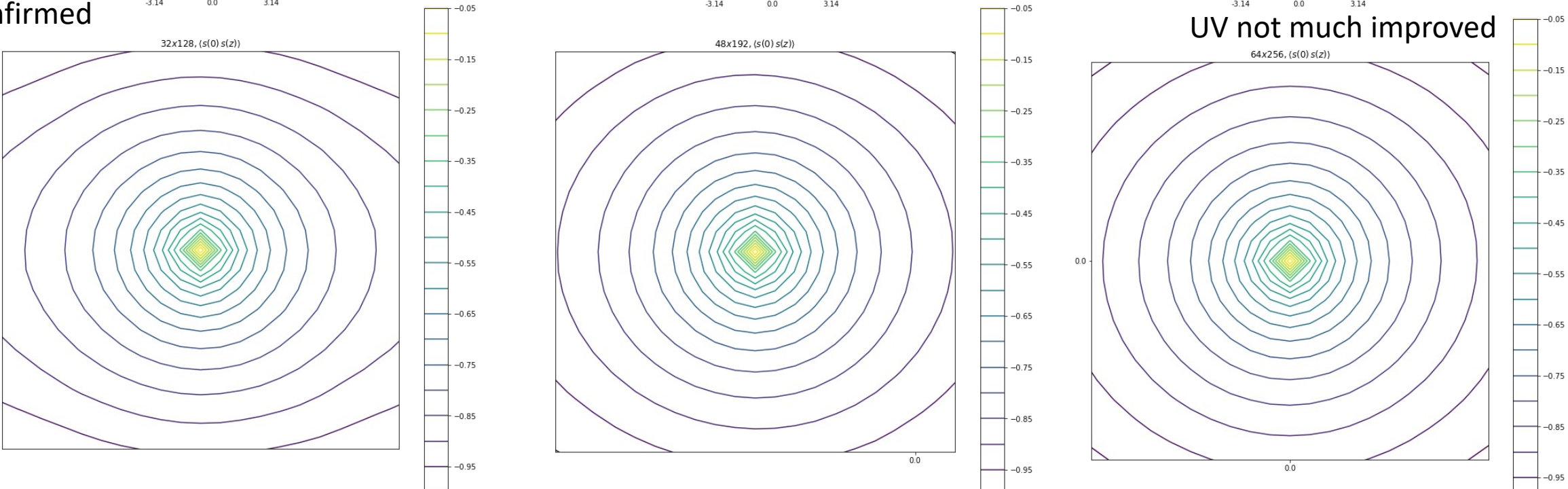
Memo:

- $n_{\text{skip}}=50$ ,  $n_{\text{therm}}=n_{\text{skip}}*100$ ,  $n_{\text{therm}}=n_{\text{traj}}*1600$ . Wolff only
- Radial quantization picture,  $x$  rescaled to  $[-\pi, \pi]$

Spin-spin  
overview



Circle confirmed

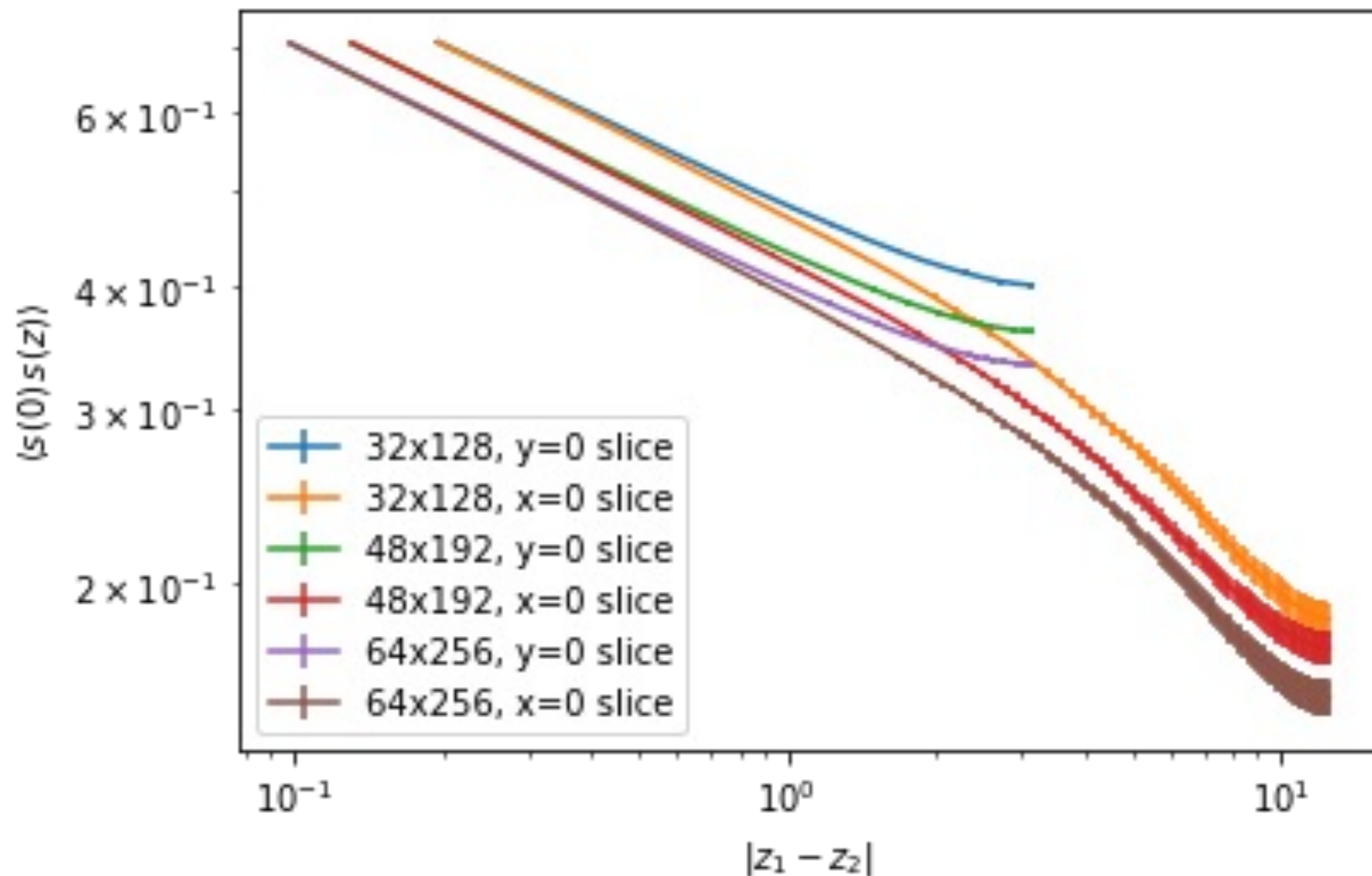


UV not much improved

Spin-spin

$x=0$  and  $y=0$  slices

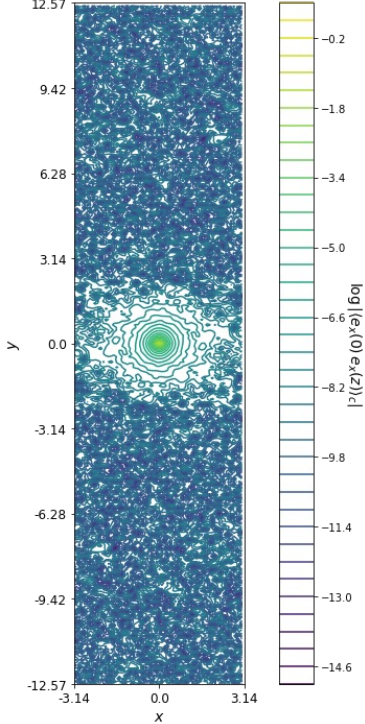
- Exponents seem to agree among three
- Reason for the overall factor needs to be understood; IR as well  
→ compare to exact results of Francesco



Energy-energy  
(64x256)

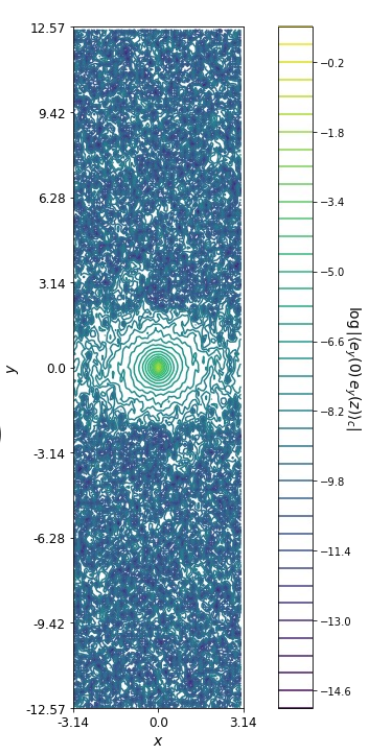
ex-ex

$$e_x \equiv \frac{1}{2} s_z (s_{z+\hat{x}} + s_{z-\hat{x}})$$

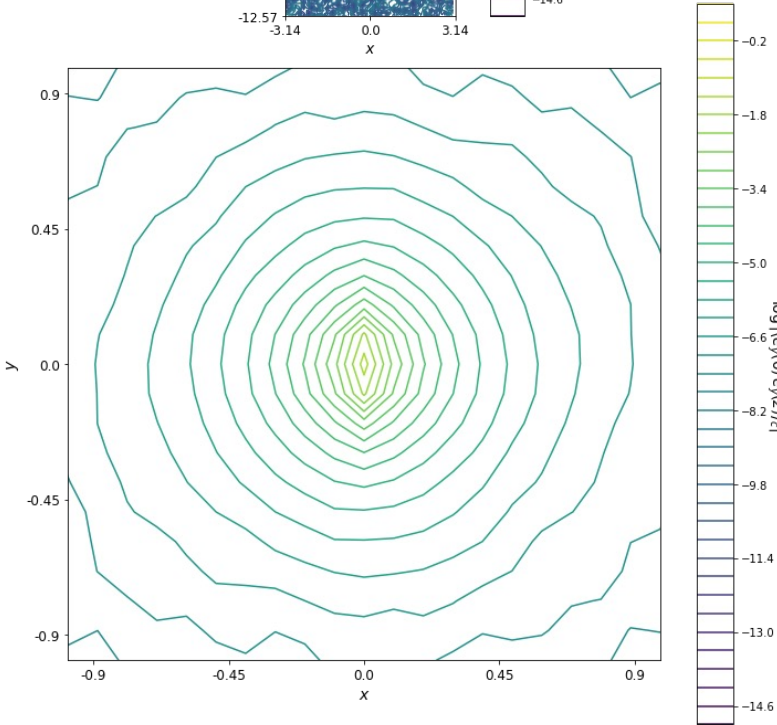
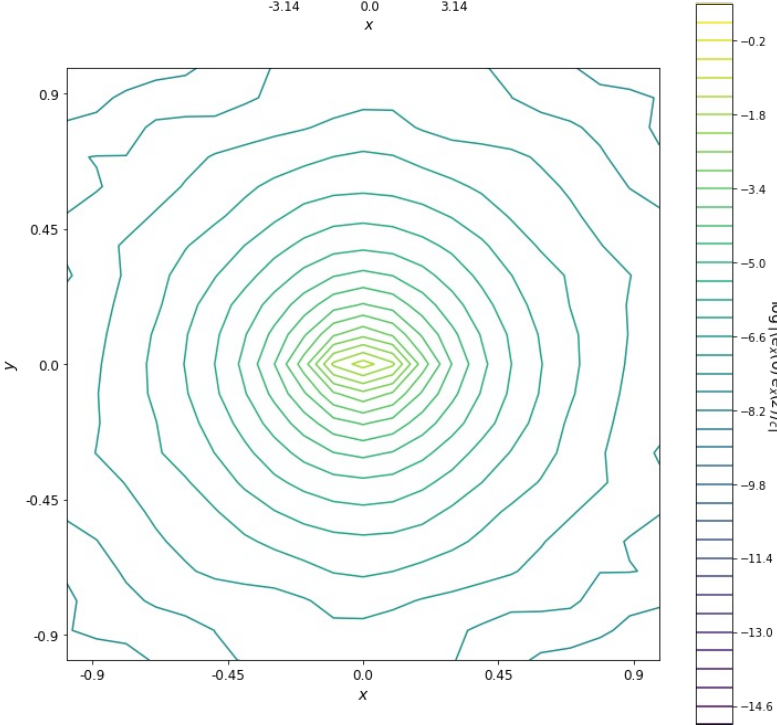


ey-ey

$$e_y \equiv \frac{1}{2} s_z (s_{z+\hat{y}} + s_{z-\hat{y}})$$



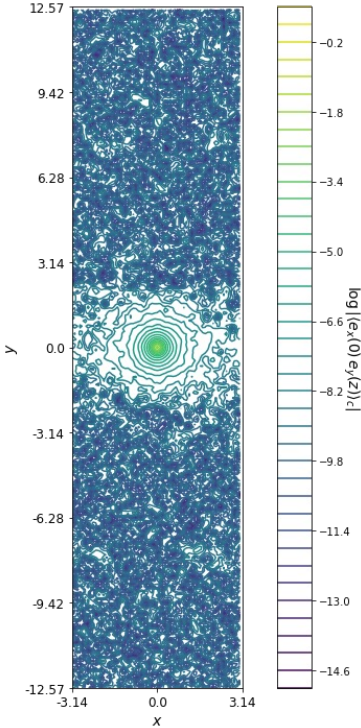
Directional dependence manifest at UV





Energy-energy  
(64x256)

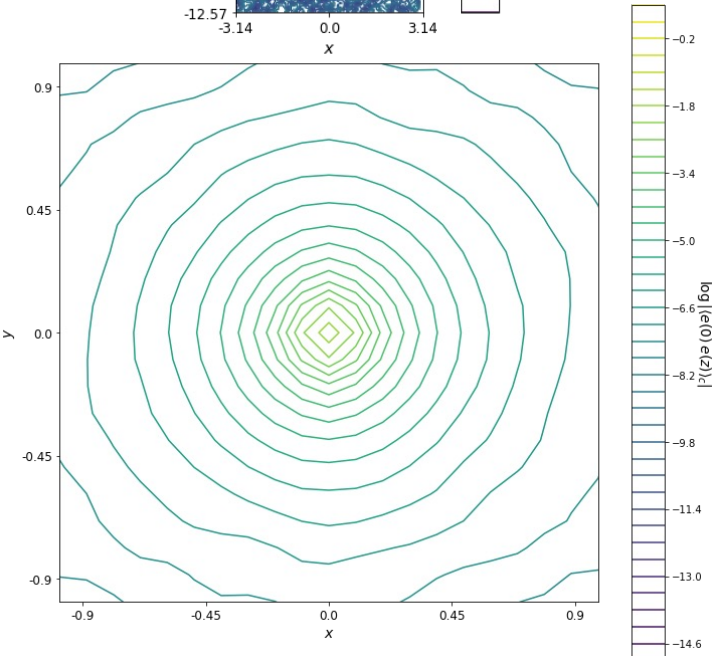
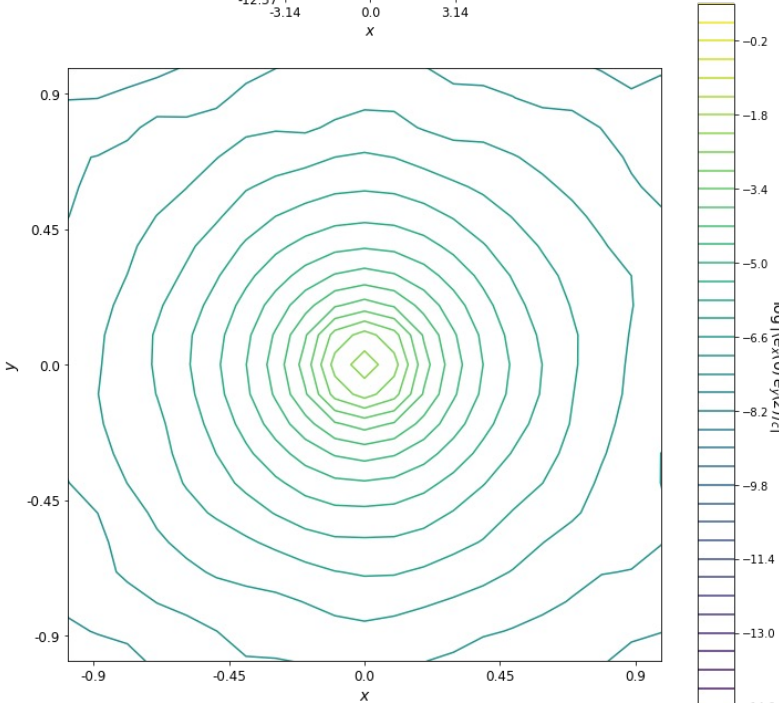
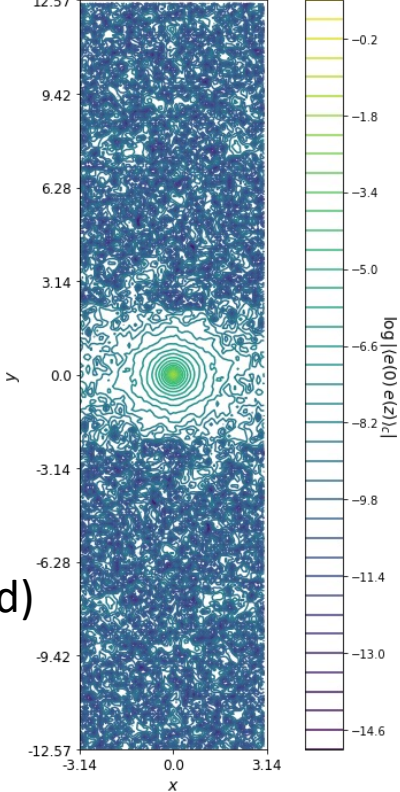
ex-ey



$$e \equiv \frac{1}{4} s_z (s_{z+\hat{x}} + s_{z-\hat{x}} + s_{z+\hat{y}} + s_{z-\hat{y}})$$

Directional dependence not much evident (as expected)  
Yet differs at UV

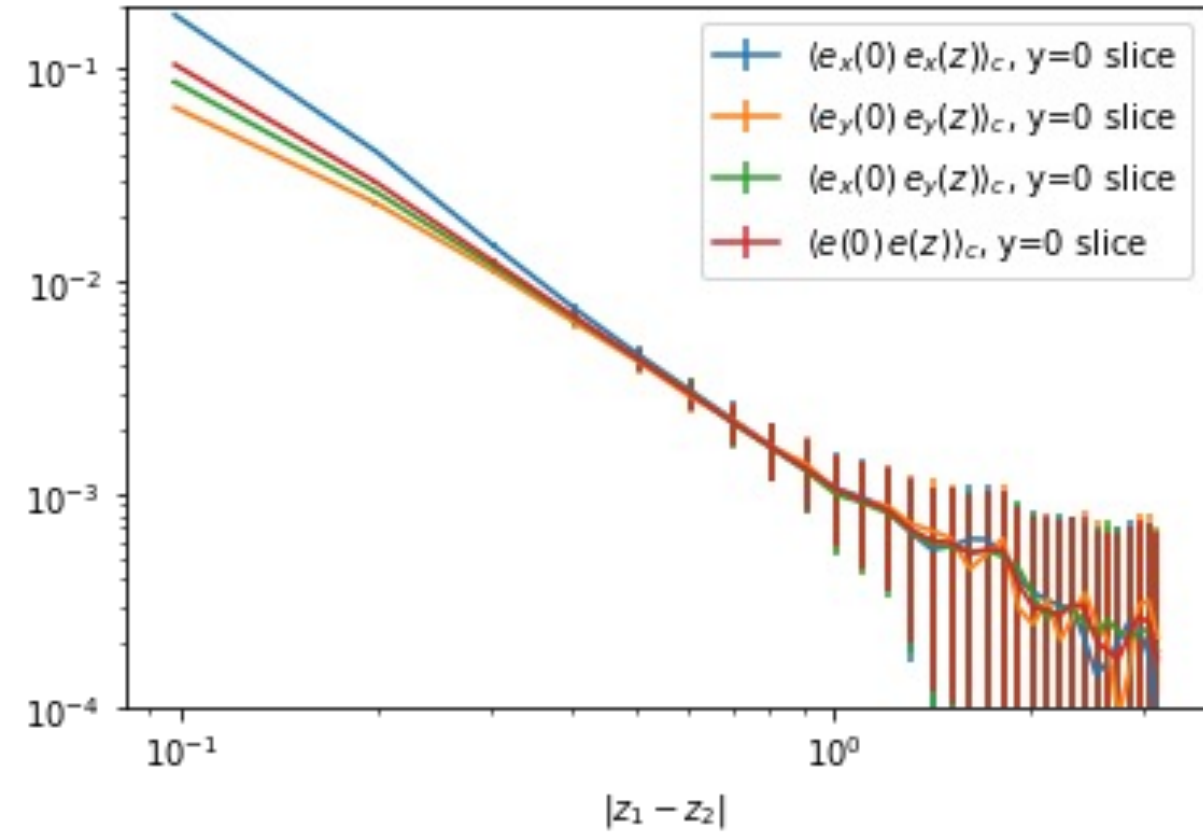
e-e



## Energy-energy (64x256)

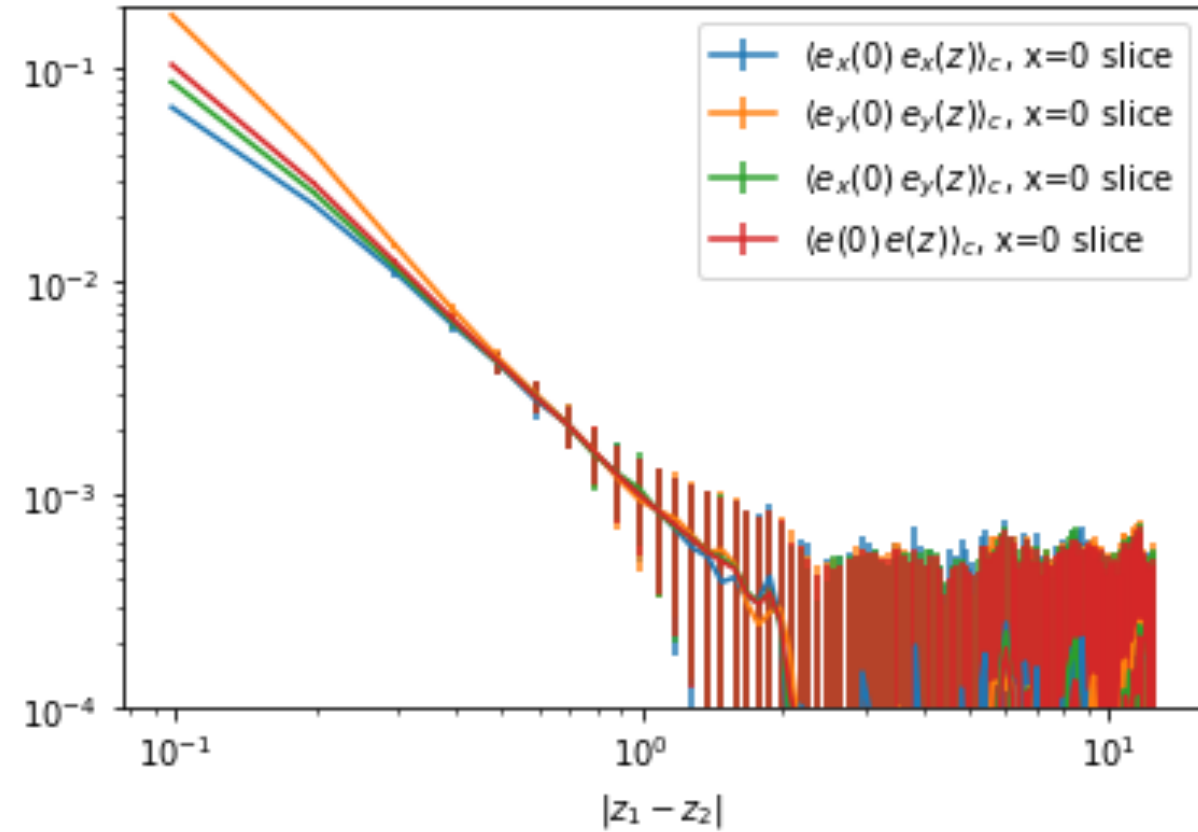
y=0 slice

64x256



x=0 slice

64x256



- Deviation at small distance (as expected)
- Small window but have power-like regions  
→ exponent needs to be compared to exact results

Energy-energy  
 $x=0$  and  $y=0$  slices

- Reason for the overall factor needs to be understood here as well (large chance of misunderstanding)
- Difference in IR not much evident as spin-spin

