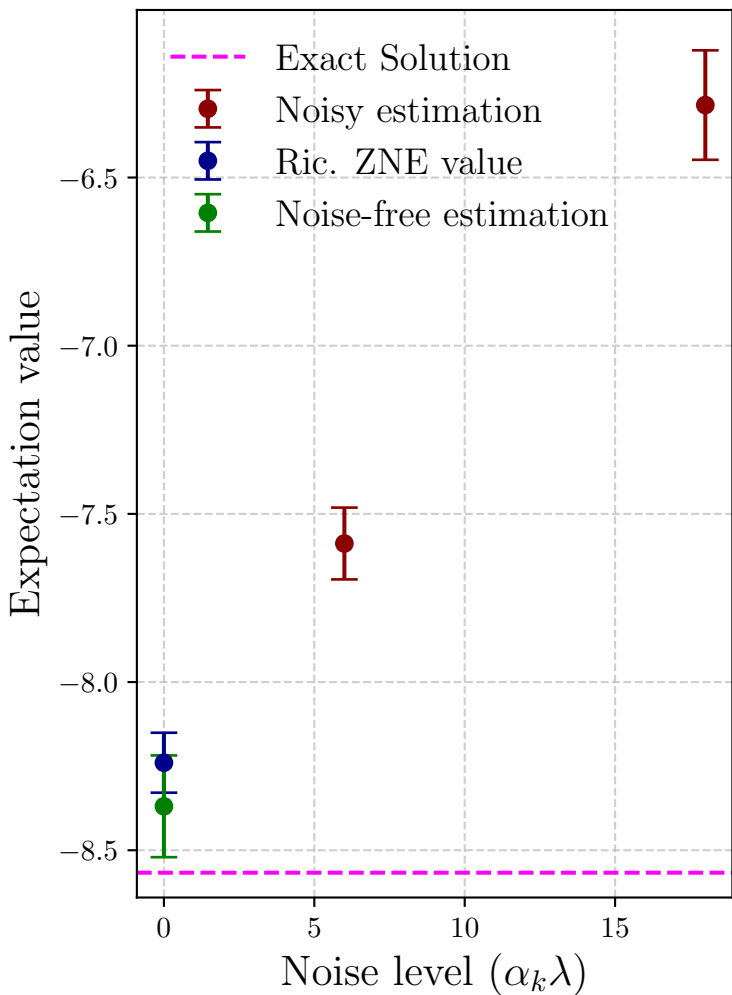


Anstze with noise-free time-evolution.  
Noise: Dephasing, [0.001,0.001,0,0]

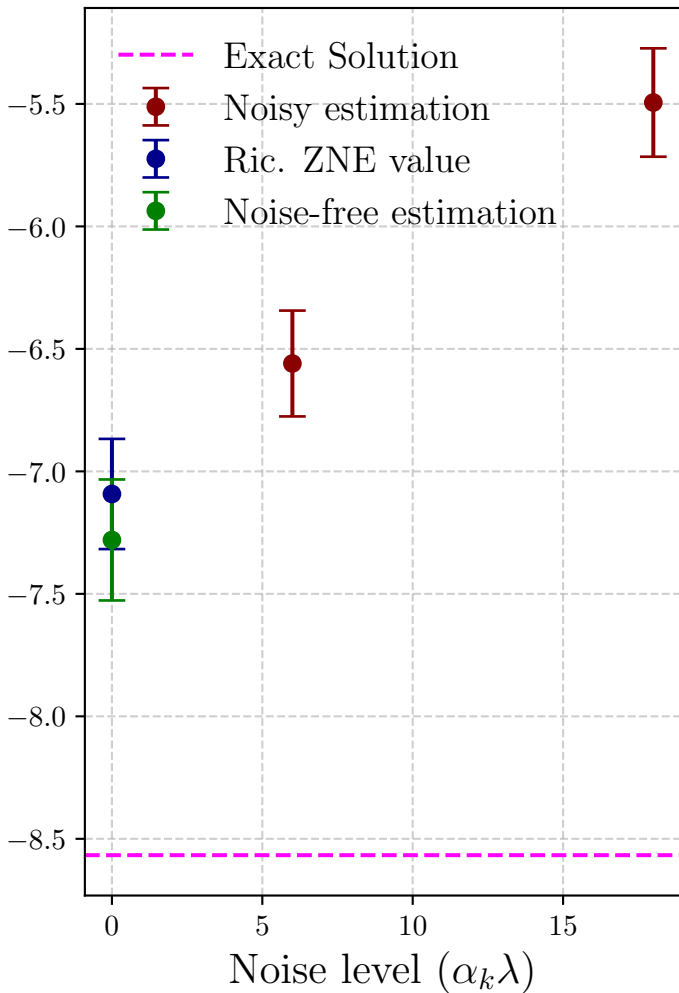
Title	Simulation	Mean	Std
xy	vqe	-7.588028443549487	0.10673748123865216
xy	redundant (noise=6)	-7.5880284435494385	0.10673748123865909
xy	redundant (noise=18)	-6.28454723195193	0.1627423405639358
xy	zne	-8.239769049348192	0.08912986050559951
xy	noiseoff	-8.369342611101047	0.15124979844206457
ising	vqe	-6.55965352212981	0.21602941424704925
ising	redundant (noise=6)	-6.559653522129835	0.21602941424705321
ising	redundant (noise=18)	-5.4942771928304195	0.22127314516423383
ising	zne	-7.092341686779543	0.22490941122324423
ising	noiseoff	-7.2800222505553736	0.24690963596051196
heisenberg	vqe	-5.97122563622368	0.3274932846028536
heisenberg	redundant (noise=6)	-5.97122563622362	0.3274932846028536
heisenberg	redundant (noise=18)	-4.7016950863487645	0.3141739134474781
heisenberg	zne	-6.605990911161048	0.3456748215824703
heisenberg	noiseoff	-6.9205461139528435	0.19766791757742266
heisenberg-ric3	vqe	-5.97122563622368	0.3274932846028536
heisenberg-ric3	redundant (noise=6)	-5.97122563622362	0.3274932846028537
heisenberg-ric3	redundant (noise=18)	-4.701695086348764	0.31417391344747814
heisenberg-ric3	redundant (noise=26)	-4.014099834939171	0.31514195679643936
heisenberg-ric3	zne	-6.713152863903258	0.34822114941292537
heisenberg-ric3	noiseoff	-6.9205461139528435	0.19766791757742266
heisenberg-ricmul	vqe	-5.97122563622368	0.3274932846028536
heisenberg-ricmul	redundant (noise=(4, 2))	-5.97122563622362	0.32749328460285343
heisenberg-ricmul	redundant (noise=(12,6))	-4.7016950863487645	0.31417391344747825
heisenberg-ricmul	redundant (noise=(20, 6))	-4.01409983493917	0.3151419567964393
heisenberg-ricmul	zne	-6.605990911161048	0.34567482158247037
heisenberg-ricmul	noiseoff	-6.9205461139528435	0.19766791757742266

## XY ansatz

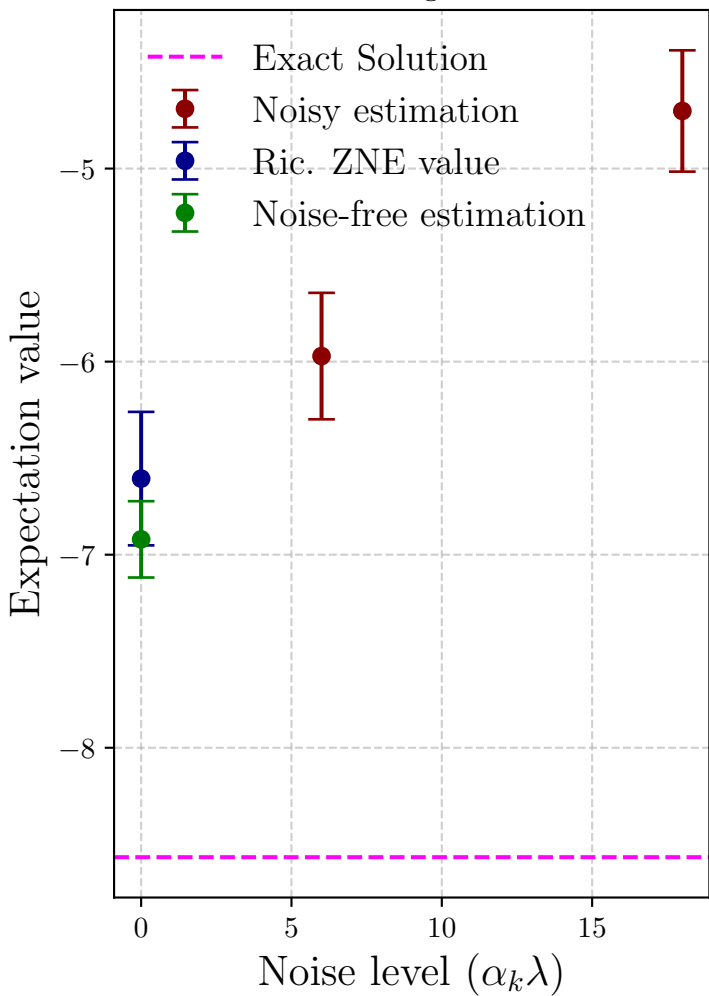


# Ising ansatz

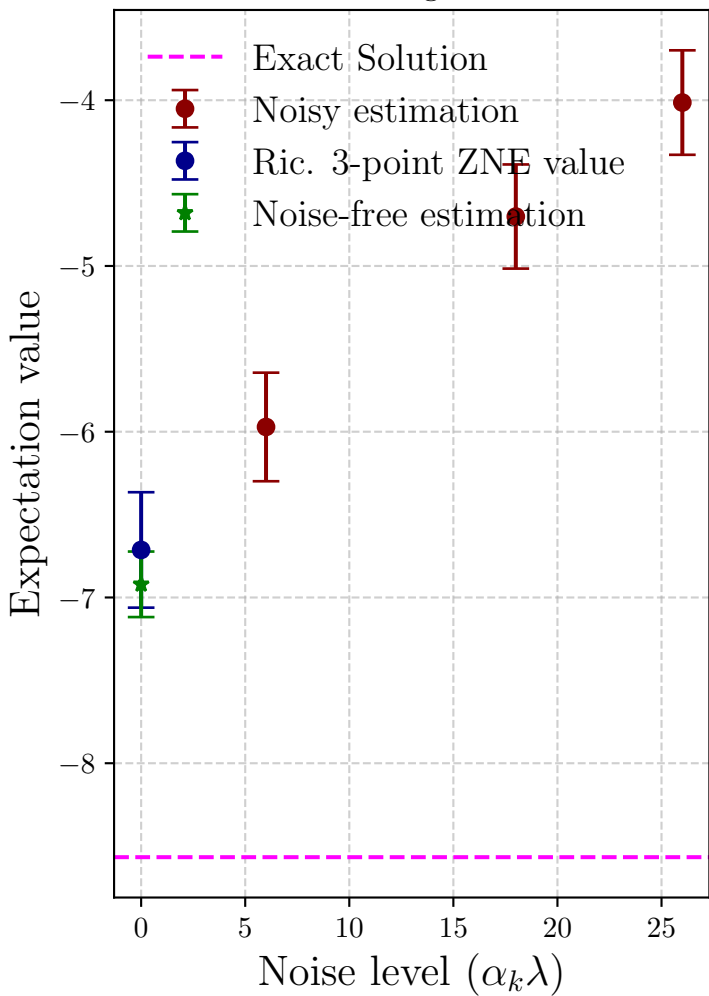
Expectation value



# Heisenberg ansatz

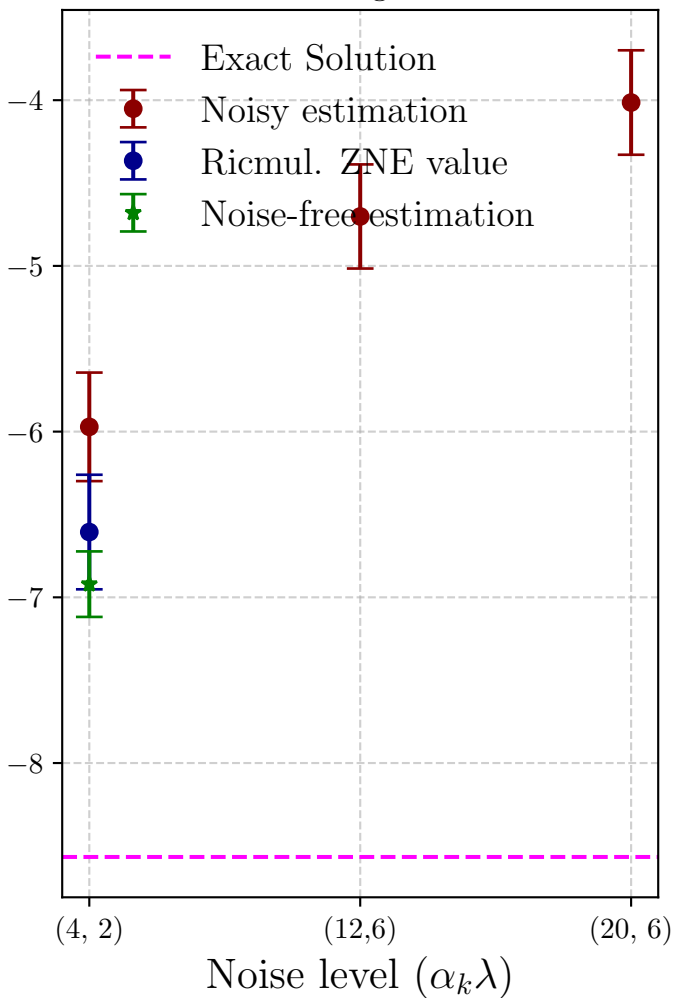


# Heisenberg ansatz



# Heisenberg ansatz

Expectation value



XY VQE CONFIGURATION

Parameter	Value
run	vqe
nqubits	7
state	dmatrix
output.file_name_prefix	xy_noisefree_time_evo_dephasing
output.draw.status	True
output.draw.fig_dpi	100
output.draw.type	png
observable.def	ising
observable.coefficients.cn	[0.5, 0.5, 0.5, 0.5, 0.5, 0.5]
observable.coefficients.bn	[1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0]
observable.coefficients.r	1
ansatz.layer	30
ansatz.gateset	1
ansatz.ugate.type	xy-iss
ansatz.ugate.coefficients.cn	[0.5, 0.5, 0.5, 0.5, 0.5, 0.5]
ansatz.ugate.coefficients.bn	[0, 0, 0, 0, 0, 0, 0]
ansatz.ugate.coefficients.r	0
ansatz.ugate.time.min	0.0
ansatz.ugate.time.max	10.0
vqe.iteration	10
vqe.optimization.status	True
vqe.optimization.algorithm	SLSQP
vqe.optimization.constraint	True
init_param.value	random
noise_profile.status	True
noise_profile.type	dephasing
noise_profile.noise_prob	[0.001, 0.001, 0, 0]
noise_profile.noise_on_init_param.status	False
noise_profile.noise_on_init_param.value	0
redundant.identity_factors	[[0, 0, 0, 0], [1, 1, 0, 0]]
zne.method	richardson
zne.degree	1
zne.sampling	default
zne.data_points	

# ISING VQE CONFIGURATION

Parameter	Value
run	vqe
nqubits	7
state	dmatrix
output.file_name.prefix	ising_noisefree.time_evo.dephasing
output.draw.status	True
output.draw.fig_dpi	100
output.draw.type	png
observable.def	ising
observable.coefficients.cn	[0.5, 0.5, 0.5, 0.5, 0.5, 0.5]
observable.coefficients.bn	[1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0]
observable.coefficients.r	1
ansatz.layer	30
ansatz.gateset	1
ansatz.ugate.type	ising
ansatz.ugate.coefficients.cn	[0.5, 0.5, 0.5, 0.5, 0.5, 0.5]
ansatz.ugate.coefficients.bn	[0, 0, 0, 0, 0, 0, 0]
ansatz.ugate.coefficients.r	0
ansatz.ugate.time.min	0.0
ansatz.ugate.time.max	10.0
vqe.iteration	10
vqe.optimization.status	True
vqe.optimization.algorithm	SLSQP
vqe.optimization.constraint	True
init_param.value	random
noise_profile.status	True
noise_profile.type	dephasing
noise_profile.noise_prob	[0.001, 0.001, 0, 0]
noise_profile.noise_on_init_param.status	False
noise_profile.noise_on_init_param.value	0
redundant.identity_factors	[[0, 0, 0, 0], [1, 1, 0, 0]]
zne.method	richardson
zne.degree	1
zne.sampling	default
zne.data_points	



HEISENBERG VQE CONFIGURATION

Parameter	Value
run	vqe
nqubits	7
state	dmatrix
output.file_name_prefix	heisenberg_noisefree_time_evo_dephasing
output.draw.status	True
output.draw.fig_dpi	100
output.draw.type	png
observable.def	ising
observable.coefficients.cn	[0.5, 0.5, 0.5, 0.5, 0.5, 0.5]
observable.coefficients.bn	[1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0]
observable.coefficients.r	1
ansatz.layer	30
ansatz.gateset	1
ansatz.ugate.type	heisenberg
ansatz.ugate.coefficients.cn	[0.5, 0.5, 0.5, 0.5, 0.5, 0.5]
ansatz.ugate.coefficients.bn	[0, 0, 0, 0, 0, 0, 0]
ansatz.ugate.coefficients.r	0
ansatz.ugate.time.min	0.0
ansatz.ugate.time.max	10.0
vqe.iteration	10
vqe.optimization.status	True
vqe.optimization.algorithm	SLSQP
vqe.optimization.constraint	True
init_param.value	random
noise_profile.status	True
noise_profile.type	dephasing
noise_profile.noise_prob	[0.001, 0.001, 0, 0]
noise_profile.noise_on_init_param.status	False
noise_profile.noise_on_init_param.value	0
redundant.identity_factors	[[0, 0, 0, 0], [1, 1, 0, 0]]
zne.method	richardson
zne.degree	1
zne.sampling	default
zne.data_points	