

Table 1: AUROC of the MLCAUSALITY and KANGCI on the Lorenz-96 dataset.

Models	AUROC		
	$p = 10, F = 10$ $T = 1000$	$p = 40, F = 40$ $T = 1000$	$p = 40, F = 40$ $T = 500$
MLCAUSALITY	0.812 $\pm$ 0.032	0.679 $\pm$ 0.051	0.523 $\pm$ 0.054
KANGCI	1.0 $\pm$ 0.000	0.991 $\pm$ 0.003	0.966 $\pm$ 0.015

Table 2: AUROC of the MLCAUSALITY and KANGCI on the Dream-3 dataset, T=966, p=100

Models	AUROC				
	Ecoli-1	Ecoli-2	Yeast-1	Yeast-2	Yeast-3
MLCAUSALITY	0.492	0.486	0.510	0.523	0.496
KANGCI	0.758	0.680	0.667	0.552	0.562

Table 3: AUROC of the MLCAUSALITY and KANGCI on the Dream-4 dataset, T=210, p=100

Models	AUROC				
	Gene-1	Gene-2	Gene-3	Gene-4	Gene-5
MLCAUSALITY	0.512	0.518	0.495	0.502	0.501
KANGCI	0.747	0.591	0.602	0.613	0.601

Table 4: AUROC of the MLCAUSALITY and KANGCI on the VAR dataset.

Models	AUROC		
	$p = 10, T = 1000$ $sparsity = 0.2$ $lag = 3$	$p = 10, T = 1000$ $sparsity = 0.3$ $lag = 3$	$p = 10, T = 1000$ $sparsity = 0.2$ $lag = 5$
MLCAUSALITY	0.852 $\pm$ 0.006	0.834 $\pm$ 0.009	0.817 $\pm$ 0.011
KANGCI	1.0 $\pm$ 0.000	0.993 $\pm$ 0.003	1.0 $\pm$ 0.000

Table 5: AUROC of the MLCAUSALITY and KANGCI on the fMRI Bold signal

Models	AUROC				
	Sim-1	Sim-2	Sim-3	Sim-4	Sim-5
MLCAUSALITY	0.598±0.04	0.601±0.03	0.655±0.03	0.599±0.01	0.623±0.04
KANGCI	0.809±0.08	0.838±0.03	0.875±0.02	0.902±0.02	0.856±0.05
	Sim-6	Sim-7	Sim-8	Sim-9	Sim-10
MLCAUSALITY	0.604±0.03	0.617±0.03	0.622±0.04	0.553±0.03	0.641±0.04
KANGCI	0.922±0.02	0.895±0.04	0.763±0.08	0.824±0.08	0.780±0.07
	Sim-11	Sim-12	Sim-13	Sim-14	Sim-15
MLCAUSALITY	0.603±0.03	0.596±0.02	0.575±0.04	0.599±0.03	0.588±0.05
KANGCI	0.823±0.03	0.847±0.03	0.749±0.08	0.788±0.08	0.736±0.08
	Sim-16	Sim-17	Sim-18	Sim-19	Sim-20
MLCAUSALITY	0.581±0.02	0.577±0.03	0.497±0.04	0.512±0.06	0.511±0.05
KANGCI	0.721±0.09	0.853±0.03	0.806±0.06	0.872±0.03	0.909±0.03
	Sim-21	Sim-22	Sim-23	Sim-24	Sim-25
MLCAUSALITY	0.697±0.07	0.606±0.05	0.620±0.06	0.552±0.05	0.608±0.04
KANGCI	0.805±0.07	0.811±0.06	0.664±0.08	0.560±0.09	0.742±0.08
	Sim-26	Sim-27	Sim-28		
MLCAUSALITY	0.574±0.03	0.573±0.02	0.592±0.06		
KANGCI	0.702±0.09	0.736±0.08	0.809±0.07		

Table 6: AUROC of tuning the threshold on Dream-3 dataset.

Dataset	Threshold					
	0.01	0.05	0.10	0.15	0.20	0.25
Ecoli-1	0.756	0.757	0.758	0.760	0.761	0.761
Ecoli-2	0.677	0.680	0.681	0.683	0.677	0.677
Yeast-1	0.667	0.667	0.667	0.667	0.667	0.667
Yeast-2	0.549	0.552	0.552	0.552	0.552	0.546
Yeast-3	0.512	0.512	0.512	0.512	0.512	0.512
	0.30	0.35	0.40	0.45	0.50	
	Ecoli-1	0.759	0.755	0.745	0.734	0.734
	Ecoli-2	0.676	0.675	0.663	0.652	0.641
	Yeast-1	0.667	0.667	0.667	0.667	0.667
	Yeast-2	0.543	0.542	0.535	0.533	0.521
	Yeast-3	0.562	0.562	0.562	0.562	0.562