1 Test matrices

Matrix	Patt. symm.	Num. symm.	Diag. dom.	Pos. def.	NNZ	n	Condition	Conn. comp.
add20	100%	52.7%	No	No	13,151	2,395	1.204710e+04	1
c-20	100%	100%	No	No	20,445	2,921	1.049837e+12	1
cryg2500	99.5%	0%	No	No	12,349	2,500	3.631392e+16	1
dw2048	98.5%	94.8%	No	No	10,114	2,048	2.093210e+03	1
orsreg_1	100%	41.2%	**Yes**	No	14,133	2,204	6.745269e+03	1
pde2961	100%	50.1%	No	No	14,585	2,961	6.424933e+02	1
wang1	100%	80.8%	No	No	19,093	2,903	2.032301e+04	1
ex28[1]	100%	98.8%	No	No	77,031	2,603	1.983028e+05	1
gre512[2]	0%	0%	No	No	1,976	512	1.58318e+02	1

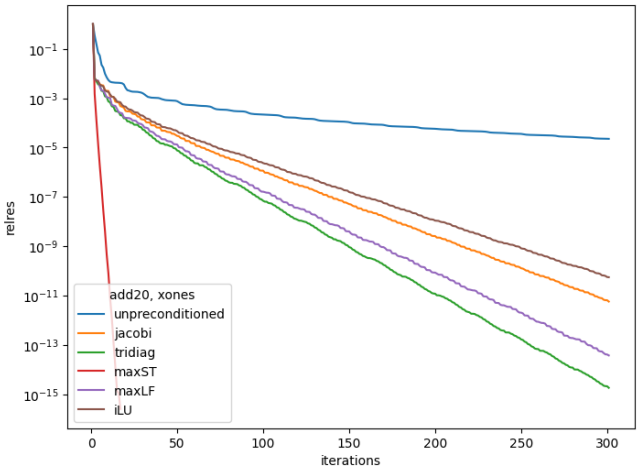
2 S coverage, degree[3]

Matrix	jacobi	tridiag	maxLF	maxST	minST
add20	0.5686	0.5698	0.9496	0.9997	0.6480
c-20	0.9994	0.9994	0.9996	0.9998	0.9996
cryg2500	0.5038	0.8796	0.9040	0.9064	0.5744
dw2048	0.5808	0.9140	0.9423	0.9437	0.6371
orsreg_1	0.5001	0.5003	0.9949	0.9954	0.5017
pde2961	0.5027	0.6310	0.8730	0.8742	0.6370
wang1	0.5008	0.7422	0.8795	0.8905	0.5316
ex28	0.3236	0.3311	0.6349	0.6588	0.3239
gre512	0.1797	0.1816	0.4165	0.4292	0.4292

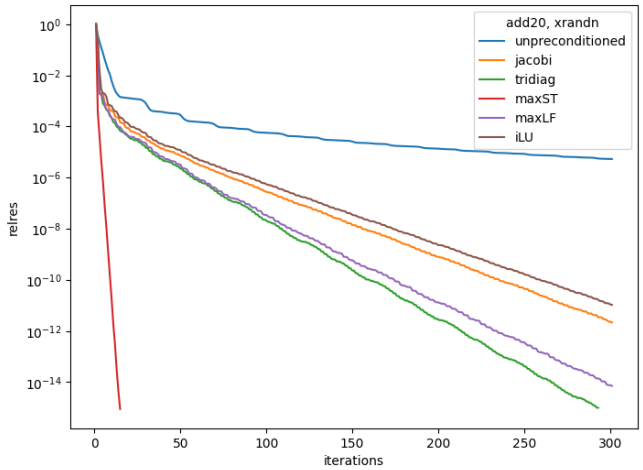
Matrix	orig	jacobi	tridiag	maxLF	maxST	minST
add20	83	0	2	2	11	27
c-20	157				148	40
cryg2500	4				3	4
dw2048	7				5	4
orsreg_1	6				3	4
pde2961	4				3	3
wang1	6				5	6
ex28	61				5	7
gre512	4				2	2

3 Results

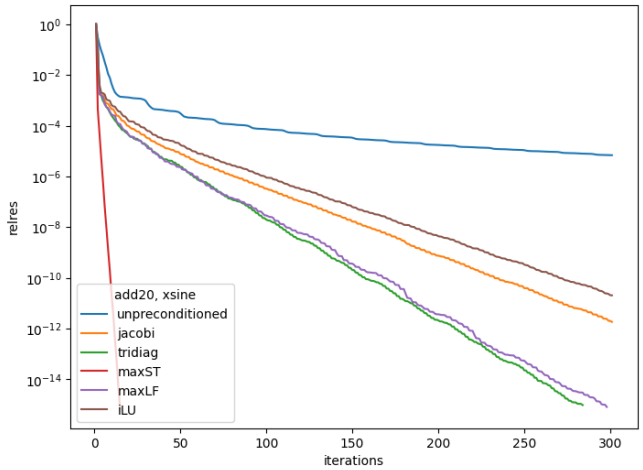
[1] Explicit zeros. Preconditioners are singular, except for iLU(0).
[2] Explicit zeros. Preconditioners are singular, except for iLU(0).
[3] S degree $:= \max_{i \in [n]} |\{j \mid A_{ij} \neq 0\}| - 1$



(a) $x = 1$

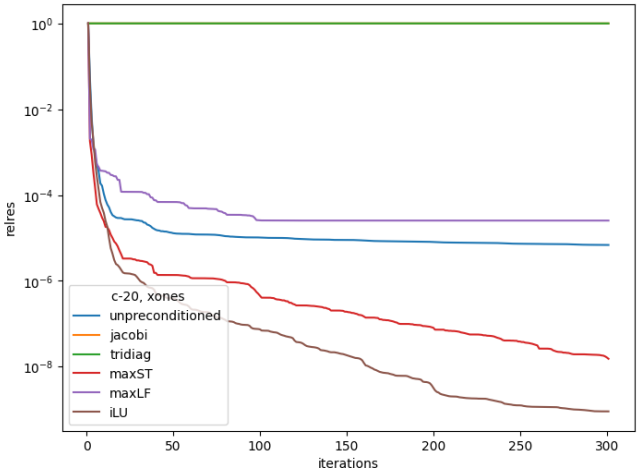


(b) $x \sim \mathcal{N}(0, 1)$

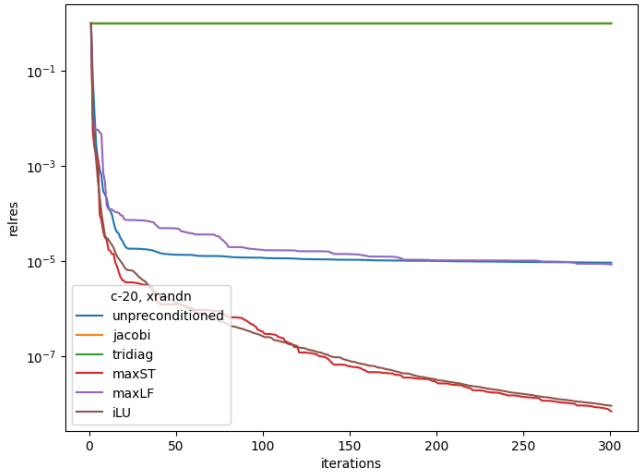


(c) $x = \sin([0, 100\pi])$

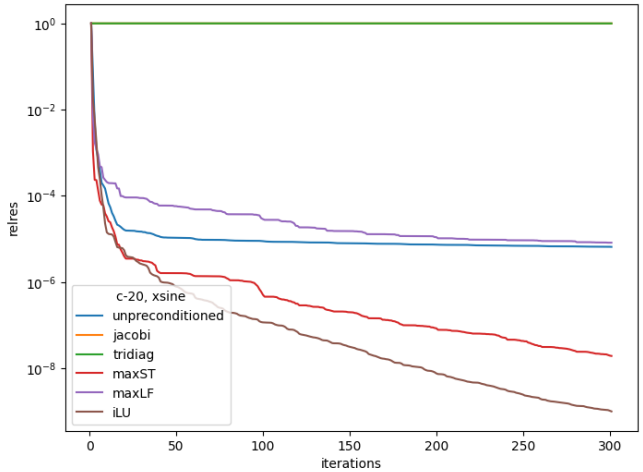
Figure 1: add20



(a) $x = 1$

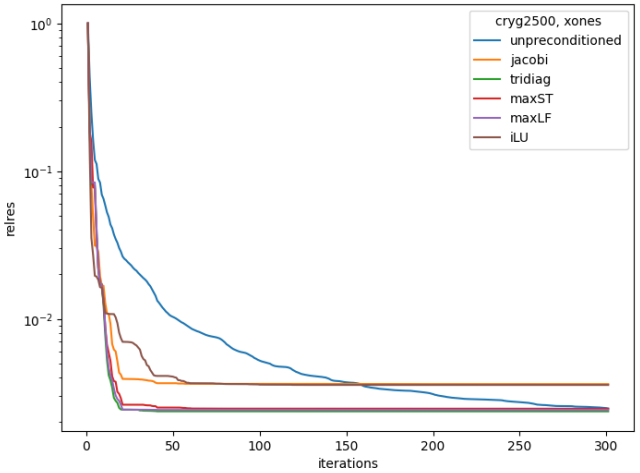


(b) $x \sim \mathcal{N}(0, 1)$

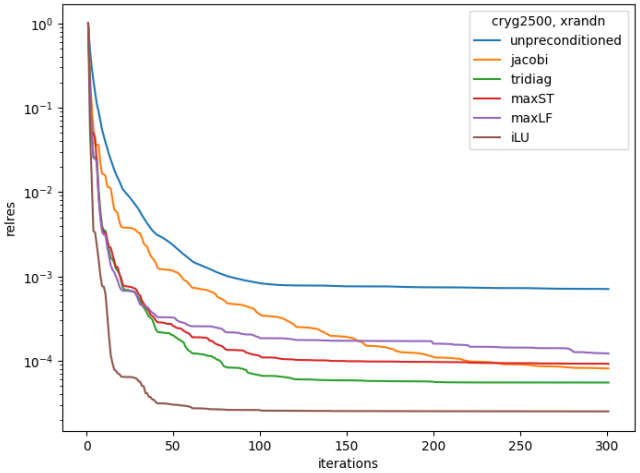


(c) $x = \sin([0, 100\pi])$

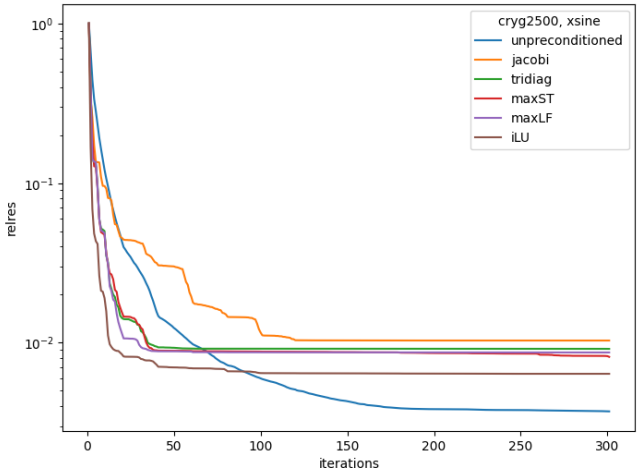
Figure 2: c-20



(a) $x = 1$

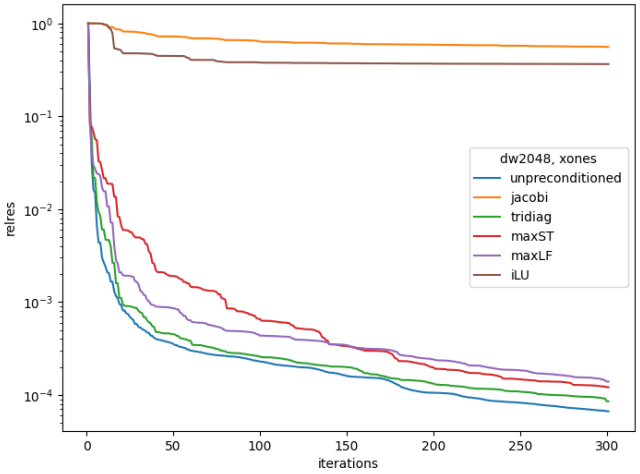


(b) $x \sim \mathcal{N}(0, 1)$

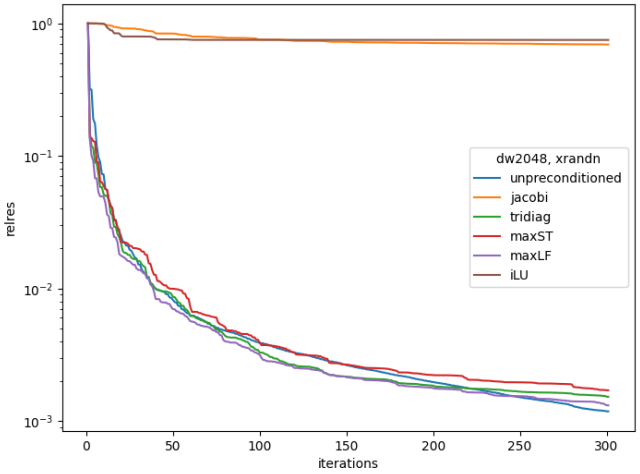


(c) $x = \sin([0, 100\pi])$

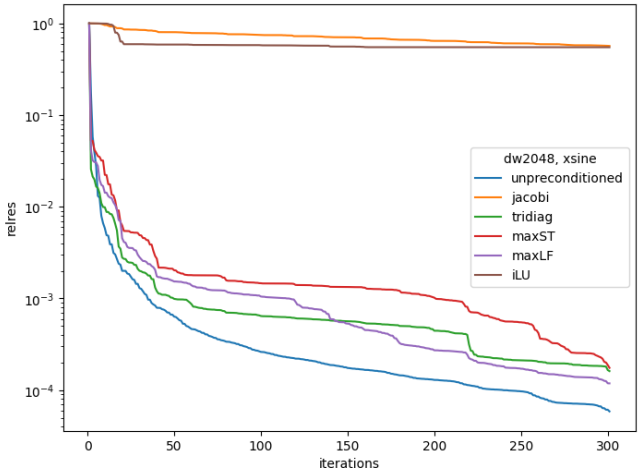
Figure 3: cryg2500



(a) $x = 1$

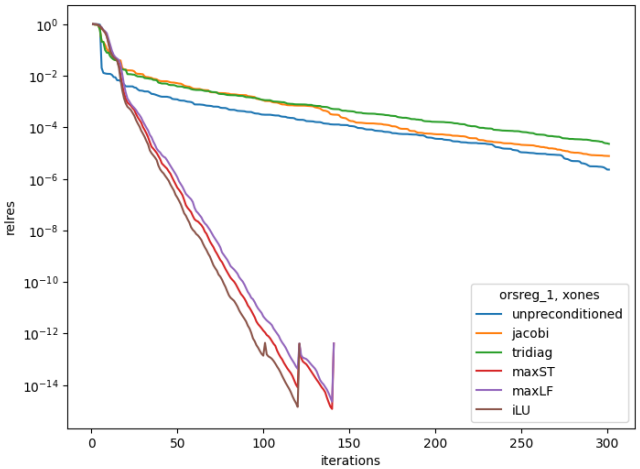


(b) $x \sim \mathcal{N}(0, 1)$

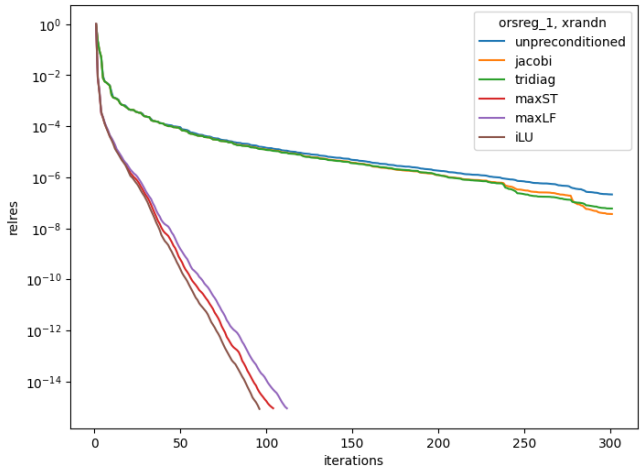


(c) $x = \sin([0, 100\pi])$

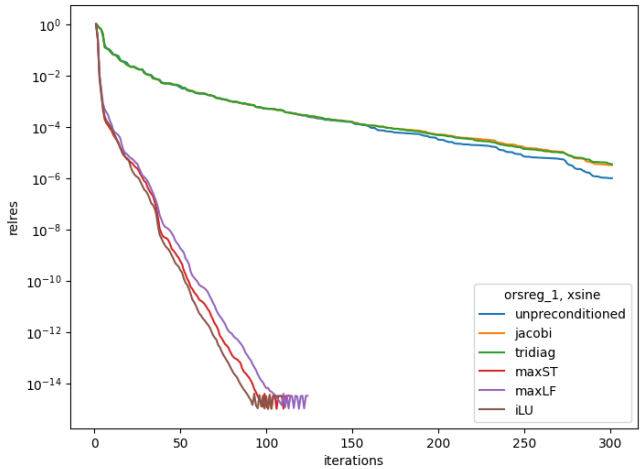
Figure 4: dw2048



(a) $x = 1$

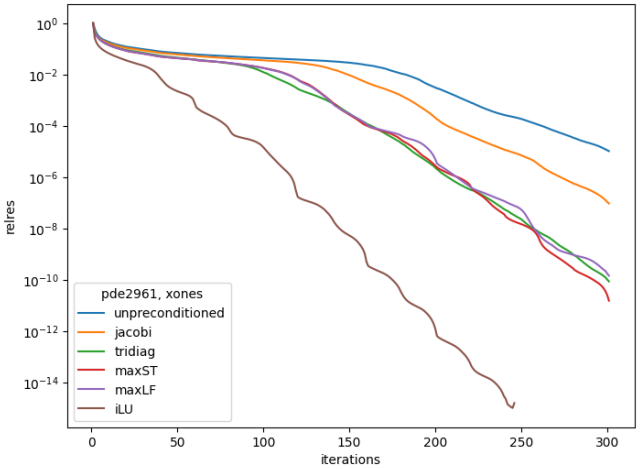


(b) $x \sim \mathcal{N}(0, 1)$

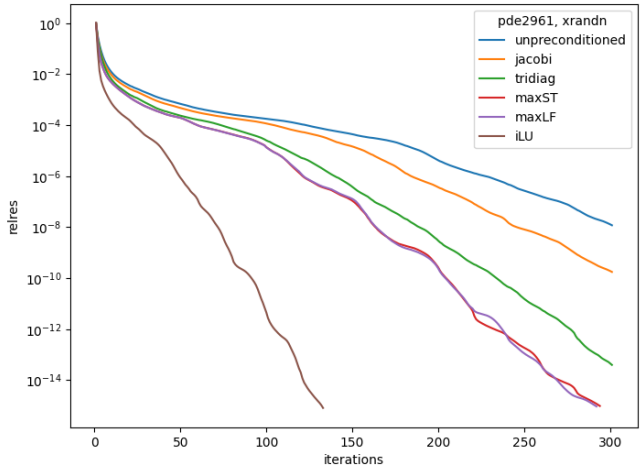


(c) $x = \sin([0, 100\pi])$

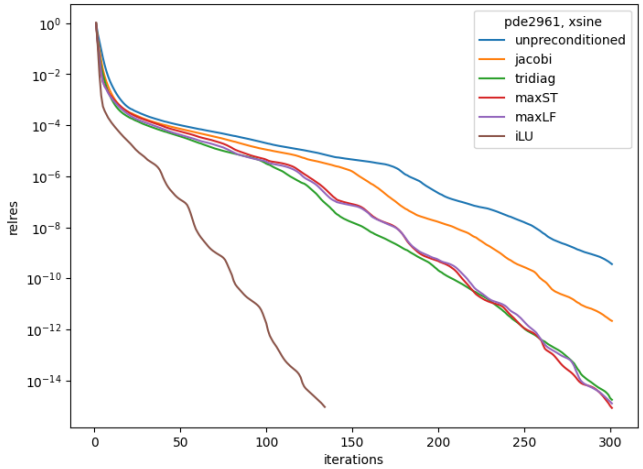
Figure 5: orsreg_1



(a) $x = 1$

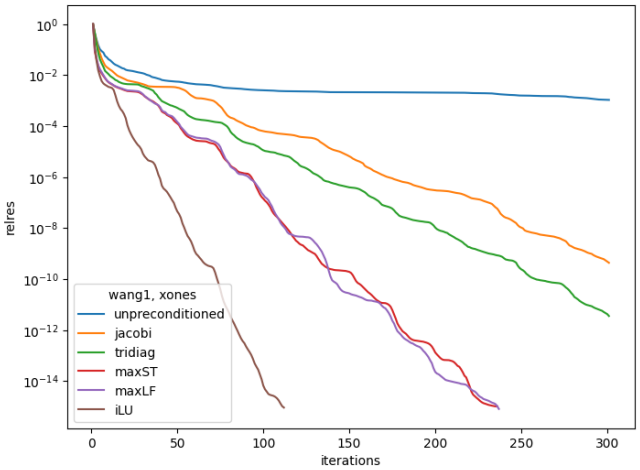


(b) $x \sim \mathcal{N}(0, 1)$

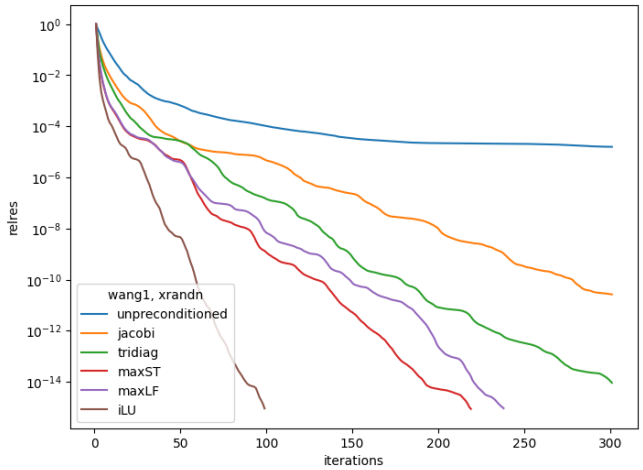


(c) $x = \sin([0, 100\pi])$

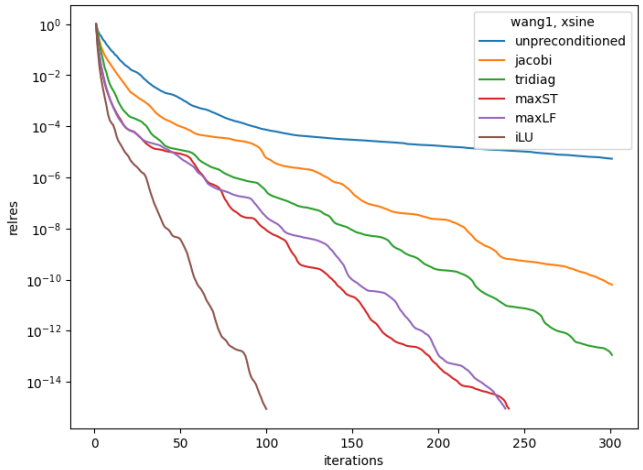
Figure 6: pde2961



(a) $x = 1$



(b) $x \sim \mathcal{N}(0, 1)$



(c) $x = \sin([0, 100\pi])$

Figure 7: wang1