

Dataset	20% CS					CSC	DILS	LCC	KMEANS
	PCCC	PCCC-N2-S	PCCC-N5-S	PCCC-N2-S-RD	COPKM				
n500-k2	0.1	0.1	0.1	0.1	54.5	3.5	3,638.6	6.2	0.1
n500-k5	0.2	0.1	0.2	0.2	12.4	3.5	3,621.5	1,076.1	0.1
n500-k10	2.7	0.3	1.3	0.8	7.3	2.8	3,613.8	1,239.7	0.1
n500-k20	25.2	0.9	7.1	12.7	–	4.4	3,622.3	303.5	0.1
n500-k50	121.2	1.5	3.0	5.5	13.1	4.6	3,615.3	325.3	0.1
n500-k100	231.2	1.0	2.2	4.3	40.3	3.2	3,619.9	461.7	0.2
n1000-k2	0.2	0.3	0.2	0.2	956.0	27.6	3,691.6	–	0.2
n1000-k5	0.2	0.2	0.2	0.2	252.6	25.4	3,696.6	44.8	0.2
n1000-k10	2.2	0.3	0.8	0.8	55.7	24.4	3,659.6	2,649.5	0.1
n1000-k20	25.5	1.1	8.6	18.6	–	24.2	3,646.8	3,670.0	0.2
n1000-k50	397.4	2.7	25.1	49.8	–	27.1	3,671.4	1,929.3	0.3
n1000-k100	310.4	2.6	11.3	15.9	80.2	28.4	3,655.6	1,585.6	0.5
n2000-k2	0.7	0.7	0.7	0.7	–	264.8	3,941.0	–	0.3
n2000-k5	0.6	0.6	0.8	0.7	4,395.5	260.7	3,877.4	–	0.4
n2000-k10	1.0	0.6	0.9	0.9	1,207.8	252.8	3,839.2	3,073.3	0.3
n2000-k20	11.9	1.3	2.9	9.4	288.6	250.9	3,768.9	4,291.7	0.3
n2000-k50	419.5	2.5	79.7	156.4	–	255.3	3,715.4	3,875.9	0.3
n2000-k100	1,410.4	4.0	38.9	63.8	168.7	248.8	3,696.2	3,666.4	0.6
n5000-k2	3.9	3.7	4.0	3.8	–	2,981.8	5,503.9	–	0.2
n5000-k5	3.4	3.2	3.6	3.6	–	2,939.3	4,871.0	–	0.2
n5000-k10	3.5	3.1	3.4	3.4	–	2,926.3	4,733.6	–	0.3
n5000-k20	4.1	3.1	3.8	4.8	–	2,752.5	4,511.0	–	0.3
n5000-k50	167.5	4.1	20.6	55.5	1,924.0	2,750.3	4,570.2	–	0.4
n5000-k100	1,628.9	7.3	160.8	411.3	–	2,649.0	4,514.9	–	0.5
Sum	4,771.9	45.2	380.1	823.4	45,456.7*	18,711.7	95,295.8	60,599.0*	6.2

*Nan values (–) are replaced with 3,600 before computing the sum.

Table W99: Average running times (in seconds) of the versions of the PCCC algorithm and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) for the constraint sets of size 20% CS. The lowest values are stated in bold. The column KMEANS reports the average running time of the unconstrained k-means algorithm. The hyphen indicates that the respective algorithm returned no solution within the time limit of 3,600 seconds.