

Dataset	15% CS								KMEANS
	PCCC	PCCC-N2-S	PCCC-N5-S	PCCC-N2-S-RD	COPKM	CSC	DILS	LCC	
n500-k2	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	0.2	27.1	2.9	3,616.4	8.7	0.1
n500-k5	1.5	<b>0.2</b>	0.6	0.5	4.3	3.1	3,623.7	256.4	0.1
n500-k10	5.9	<b>0.6</b>	2.0	1.6	–	2.8	3,557.5	95.7	0.3
n500-k20	46.2	<b>1.5</b>	4.5	10.8	9.1	3.5	3,549.5	119.9	0.1
n500-k50	98.8	<b>0.9</b>	2.3	4.7	9.3	4.1	3,530.5	220.3	0.2
n500-k100	127.6	<b>0.9</b>	1.5	3.5	10.2	3.5	3,529.4	390.7	0.2
n1000-k2	0.3	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	538.4	26.3	3,651.7	–	0.2
n1000-k5	0.4	<b>0.2</b>	0.5	0.3	125.4	23.0	3,648.1	1,564.4	0.1
n1000-k10	5.0	<b>0.6</b>	1.6	1.4	19.7	26.1	3,640.2	3,082.7	0.2
n1000-k20	93.7	<b>1.8</b>	16.1	33.9	–	27.9	3,631.4	1,068.1	0.3
n1000-k50	432.2	<b>3.2</b>	9.3	13.3	37.0	26.0	3,617.4	593.4	0.1
n1000-k100	318.7	<b>3.0</b>	5.6	10.4	40.8	27.6	3,638.6	993.7	0.2
n2000-k2	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	0.6	–	236.3	3,720.4	–	0.4
n2000-k5	0.5	<b>0.3</b>	0.5	0.5	2,432.7	234.7	3,713.4	515.0	0.3
n2000-k10	3.3	<b>0.6</b>	1.5	3.5	561.9	222.1	3,732.1	–	0.5
n2000-k20	46.2	<b>2.1</b>	7.8	20.8	116.6	232.1	3,715.0	4,564.0	0.4
n2000-k50	287.7	<b>5.7</b>	137.7	65.2	–	219.4	3,711.7	3,621.9	0.6
n2000-k100	662.8	<b>5.0</b>	27.3	28.9	161.0	222.5	3,804.0	3,621.1	0.4
n5000-k2	3.9	2.5	<b>2.3</b>	2.8	–	2,930.6	3,888.4	–	0.3
n5000-k5	4.3	2.2	2.2	<b>2.0</b>	–	2,927.7	4,376.8	–	0.3
n5000-k10	2.0	<b>1.9</b>	2.1	<b>1.9</b>	–	2,833.4	4,394.7	–	0.3
n5000-k20	19.1	<b>2.3</b>	5.4	10.3	6,542.6	2,671.3	4,293.2	–	0.3
n5000-k50	519.2	<b>6.5</b>	66.8	92.9	–	2,656.8	4,159.0	–	0.5
n5000-k100	3,180.5	<b>14.2</b>	514.6	321.8	–	2,646.7	4,268.2	4,494.3	0.7
Sum	5,860.5	<b>57.0</b>	812.9	631.9	43,036.1*	18,210.3	91,011.3	54,010.3*	7.1

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

Table W98: 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 15% 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.