

| Dataset  | Objects | Features | Clusters | 0.5% CS        |                |           |           |           | DILS      |
|----------|---------|----------|----------|----------------|----------------|-----------|-----------|-----------|-----------|
|          |         |          |          | PCCC-N2-S      | PCCC-N2-S-RD   | COPKM     | LCC       | CSC       |           |
| Banana   | 5,300   | 2        | 2        | <b>6.0</b>     | 19.0           | –         | 94.1      | 4,415.0   | 3,622.2   |
| Letter   | 20,000  | 16       | 26       | <b>62.8</b>    | 291.1          | 846.1     | 3,642.4   | –         | 4,459.9   |
| Shuttle  | 57,999  | 9        | 7        | <b>15.1</b>    | 62.8           | –         | 4,926.2   | –         | –         |
| CIFAR10  | 10,000  | 3,072    | 10       | <b>742.7</b>   | 1,999.4        | –         | –         | –         | –         |
| CIFAR100 | 10,000  | 3,072    | 100      | 3,618.1        | <b>3,614.5</b> | –         | –         | –         | –         |
| MNIST    | 7,000   | 784      | 10       | <b>504.8</b>   | 1,130.5        | 3,884.6   | –         | –         | –         |
| Sum      |         |          |          | <b>4,949.6</b> | 7,117.3        | 19,130.7* | 19,462.7* | 22,415.0* | 22,482.1* |

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

Table W109: Average running times (in seconds) of the PCCC and the PCCC-R algorithms and the four state-of-the-art algorithms (COPKM, CSC, DILS, LCC) for the constraint sets of size 0.5% CS. Higher values indicate better separated clusters. 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 1,800 seconds.