Table 1: DRPM Model for different hyperparameter configurations.

Method	M	starting-alpha	alpha-0	eta1-0	phi1-0	SpatialCohesion	lpml	waic	time	mse	n-singletons	n-clusters	max-cluster-size	min-cluster-size	max-pm25-diff
drpm	0.100000	0.000000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.884 \cdot 10^{+01}$	$1.246 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.000000	False	False	False	4	$-1.274 \cdot 10^{+03}$	$2.496 \cdot 10^{+03}$	$4.467 \cdot 10^{+01}$	$1.202 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.100000	False	False	False	3	$-1.201 \cdot 10^{+03}$	$2.380 \cdot 10^{+03}$	$2.983 \cdot 10^{+01}$	$1.236 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.100000	False	False	False	4	$-1.272 \cdot 10^{+03}$	$2.491 \cdot 10^{+03}$	$4.407 \cdot 10^{+01}$	$1.218 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.250000	False	False	False	3	$-1.199 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.704 \cdot 10^{+01}$	$1.248 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.250000	False	False	False	4	$-1.268 \cdot 10^{+03}$	$2.483 \cdot 10^{+03}$	$4.519 \cdot 10^{+01}$	$1.212 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.500000	False	False	False	3	$-1.199 \cdot 10^{+03}$	$2.377 \cdot 10^{+03}$	$2.865 \cdot 10^{+01}$	$1.222 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.500000	False	False	False	4	$-1.272 \cdot 10^{+03}$	$2.491 \cdot 10^{+03}$	$4.415 \cdot 10^{+01}$	$1.212 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.750000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.379 \cdot 10^{+03}$	$2.726 \cdot 10^{+01}$	$1.237 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.750000	False	False	False	4	$-1.202 \cdot 10^{+03}$	$2.380 \cdot 10^{+03}$	$2.353 \cdot 10^{+01}$	$1.233 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.900000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.749 \cdot 10^{+01}$	$1.220 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	0.100000	0.900000	False	False	False	4	$-1.242 \cdot 10^{+03}$	$2.444 \cdot 10^{+03}$	$3.537 \cdot 10^{+01}$	$1.218 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.000000	False	False	False	3	$-1.211 \cdot 10^{+03}$	$2.396 \cdot 10^{+03}$	$3.069 \cdot 10^{+01}$	$1.225 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.000000	False	False	False	4	$-1.277 \cdot 10^{+03}$	$2.499 \cdot 10^{+03}$	$4.233 \cdot 10^{+01}$	$1.222 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.100000	False	False	False	3	$-1.201 \cdot 10^{+03}$	$2.381 \cdot 10^{+03}$	$3.100 \cdot 10^{+01}$	$1.230 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.100000	False	False	False	4	$-1.278 \cdot 10^{+03}$	$2.502 \cdot 10^{+03}$	$4.290 \cdot 10^{+01}$	$1.208 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.250000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.379 \cdot 10^{+03}$	$2.724 \cdot 10^{+01}$	$1.243 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.250000	False	False	False	4	$-1.277 \cdot 10^{+03}$	$2.513 \cdot 10^{+03}$	$4.394 \cdot 10^{+01}$	$1.185 \cdot 10^{+00}$	0	1.019231	34	2	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.500000	False	False	False	3	$-1.201 \cdot 10^{+03}$	$2.380 \cdot 10^{+03}$	$2.759 \cdot 10^{+01}$	$1.260 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.500000	False	False	False	4	$-1.214 \cdot 10^{+03}$	$2.381 \cdot 10^{+03}$	$2.219 \cdot 10^{+01}$	$1.234 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.750000	False	False	False	3	$-1.199 \cdot 10^{+03}$	$2.376 \cdot 10^{+03}$	$2.732 \cdot 10^{+01}$	$1.234 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.750000	False	False	False	4	$-1.200 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.205 \cdot 10^{+01}$	$1.222 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.900000	False	False	False	3	$-1.199 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.771 \cdot 10^{+01}$	$1.234 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	1.000000	0.900000	False	False	False	4	$-1.200 \cdot 10^{+03}$	$2.379 \cdot 10^{+03}$	$2.211 \cdot 10^{+01}$	$1.262 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.000000	False	False	False	3	$-1.234 \cdot 10^{+03}$	$2.432 \cdot 10^{+03}$	$3.819 \cdot 10^{+01}$	$1.212 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.000000	False	False	False	4	$-1.276 \cdot 10^{+03}$	$2.498 \cdot 10^{+03}$	$4.024 \cdot 10^{+01}$	$1.209 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.100000	False	False	False	3	$-1.227 \cdot 10^{+03}$	$2.421 \cdot 10^{+03}$	$3.735 \cdot 10^{+01}$	$1.238 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.100000	False	False	False	4	$-1.274 \cdot 10^{+03}$	$2.486 \cdot 10^{+03}$	$3.877 \cdot 10^{+01}$	$1.227 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.250000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.602 \cdot 10^{+01}$	$1.232 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.250000	False	False	False	4	$-1.299 \cdot 10^{+03}$	$2.537 \cdot 10^{+03}$	$4.404 \cdot 10^{+01}$	$1.212 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.500000	False	False	False	3	$-1.245 \cdot 10^{+03}$	$2.450 \cdot 10^{+03}$	$4.228 \cdot 10^{+01}$	$1.203 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.500000	False	False	False	4	$-1.230 \cdot 10^{+03}$	$2.424 \cdot 10^{+03}$	$2.678 \cdot 10^{+01}$	$1.245 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.750000	False	False	False	3	$-1.199 \cdot 10^{+03}$	$2.377 \cdot 10^{+03}$	$2.558 \cdot 10^{+01}$	$1.220 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.750000	False	False	False	4	$-1.225 \cdot 10^{+03}$	$2.417 \cdot 10^{+03}$	$2.630 \cdot 10^{+01}$	$1.218 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.900000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.624 \cdot 10^{+01}$	$1.218 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	10.000000	0.900000	False	False	False	4	$-1.203 \cdot 10^{+03}$	$2.380 \cdot 10^{+03}$	$2.171 \cdot 10^{+01}$	$1.243 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.000000	False	False	False	3	$-1.260 \cdot 10^{+03}$	$2.472 \cdot 10^{+03}$	$4.651 \cdot 10^{+01}$	$1.226 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.000000	False	False	False	4	$-1.304 \cdot 10^{+03}$	$2.540 \cdot 10^{+03}$	$3.672 \cdot 10^{+01}$	$1.240 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.100000	False	False	False	3	$-1.270 \cdot 10^{+03}$	$2.486 \cdot 10^{+03}$	$4.613 \cdot 10^{+01}$	$1.207 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.100000	False	False	False	4	$-1.214 \cdot 10^{+03}$	$2.405 \cdot 10^{+03}$	$2.404 \cdot 10^{+01}$	$1.252 \cdot 10^{+00}$	2	1.230769	34	1	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.250000	False	False	False	3	$-1.270 \cdot 10^{+03}$	$2.490 \cdot 10^{+03}$	$4.631 \cdot 10^{+01}$	$1.209 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.250000	False	False	False	4	$-1.230 \cdot 10^{+03}$	$2.424 \cdot 10^{+03}$	$2.719 \cdot 10^{+01}$	$1.239 \cdot 10^{+00}$	1	1.307692	34	1	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.500000	False	False	False	3	$-1.213 \cdot 10^{+03}$	$2.400 \cdot 10^{+03}$	$3.021 \cdot 10^{+01}$	$1.225 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.500000	False	False	False	4	$-1.233 \cdot 10^{+03}$	$2.395 \cdot 10^{+03}$	$3.017 \cdot 10^{+01}$	$1.256 \cdot 10^{+00}$	1	1.365385	34	1	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.750000	False	False	False	3	$-1.198 \cdot 10^{+03}$	$2.376 \cdot 10^{+03}$	$2.351 \cdot 10^{+01}$	$1.231 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.750000	False	False	False	4	$-1.247 \cdot 10^{+03}$	$2.440 \cdot 10^{+03}$	$3.049 \cdot 10^{+01}$	$1.223 \cdot 10^{+00}$	2	1.153846	34	1	$1.679 \cdot 10^{+00}$
drpm	100.000000	0.900000	False	False	False	3	$-1.220 \cdot 10^{+03}$	$2.409 \cdot 10^{+03}$	$3.174 \cdot 10^{+01}$	$1.234 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100.000000	0.900000	False	False	False	4	$-1.257 \cdot 10^{+03}$	$2.434 \cdot 10^{+03}$	$3.215 \cdot 10^{+01}$	$1.216 \cdot 10^{+00}$	1	1.096154	34	1	$1.753 \cdot 10^{+00}$

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Table 2: DRPM Model for different hyperparameter configurations – Fine-Tuning.

n-singletons n-clusters max-cluster-size min-cluster-size max-pm25-diff

Method	Μ	starting-alpha	alpha-0	eta1-0	phi1-0	SpatialCohesion	lpml	waic	$_{ m time}$	mse	n-singletons	n-clusters	max-cluster-size	min-cluster-size	max-pm25-diff
drpm	100	0.750000	True	True	True	3	$-1.351 \cdot 10^{+03}$	$2.690 \cdot 10^{+03}$	$2.418 \cdot 10^{+01}$	$1.289 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	True	True	True	4	$-2.155 \cdot 10^{+03}$	$3.621 \cdot 10^{+03}$	$3.876 \cdot 10^{+01}$	$1.423 \cdot 10^{+00}$	2	1.173077	34	1	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	True	True	False	3	$-1.782 \cdot 10^{+03}$	$3.546 \cdot 10^{+03}$	$2.403 \cdot 10^{+01}$	$1.391 \cdot 10^{+00}$	0	1.000000	34	34	$1.753\cdot10^{+00}$
drpm	100	0.750000	True	True	False	4	$-1.588 \cdot 10^{+03}$	$3.137 \cdot 10^{+03}$	$2.321 \cdot 10^{+01}$	$1.338 \cdot 10^{+00}$	2	1.057692	34	1	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	True	False	True	3	$-1.207 \cdot 10^{+03}$	$2.390 \cdot 10^{+03}$	$2.518 \cdot 10^{+01}$	$1.238 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	True	False	True	4	$-1.273 \cdot 10^{+03}$	$2.468 \cdot 10^{+03}$	$3.086 \cdot 10^{+01}$	$1.252 \cdot 10^{+00}$	1	1.153846	34	1	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	True	False	False	3	$-1.200 \cdot 10^{+03}$	$2.381 \cdot 10^{+03}$	$2.421 \cdot 10^{+01}$	$1.246 \cdot 10^{+00}$	0	1.000000	34	34	$1.753\cdot 10^{+00}$
drpm	100	0.750000	True	False	False	4	$-1.345 \cdot 10^{+03}$	$2.415 \cdot 10^{+03}$	$2.940 \cdot 10^{+01}$	$1.230 \cdot 10^{+00}$	1	1.269231	34	1	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	True	True	3	$-1.227 \cdot 10^{+03}$	$2.440 \cdot 10^{+03}$	$2.318 \cdot 10^{+01}$	$1.261 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	True	True	4	$-1.591 \cdot 10^{+03}$	$3.168 \cdot 10^{+03}$	$2.062 \cdot 10^{+01}$	$1.355 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	True	False	3	$-1.361 \cdot 10^{+03}$	$2.706 \cdot 10^{+03}$	$2.330 \cdot 10^{+01}$	$1.274 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	True	False	4	$-1.996 \cdot 10^{+03}$	$3.843 \cdot 10^{+03}$	$2.705 \cdot 10^{+01}$	$1.443 \cdot 10^{+00}$	1	1.269231	34	1	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	False	True	3	$-1.200 \cdot 10^{+03}$	$2.378 \cdot 10^{+03}$	$2.341 \cdot 10^{+01}$	$1.247 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	False	True	4	$-1.210 \cdot 10^{+03}$	$2.391 \cdot 10^{+03}$	$2.243 \cdot 10^{+01}$	$1.236 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	False	False	3	$-1.200 \cdot 10^{+03}$	$2.379 \cdot 10^{+03}$	$2.328 \cdot 10^{+01}$	$1.221 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$
drpm	100	0.750000	False	False	False	4	$-1.199\cdot 10^{+03}$	$2.376\cdot 10^{+03}$	$2.094 \cdot 10^{+01}$	$1.242 \cdot 10^{+00}$	0	1.000000	34	34	$1.753 \cdot 10^{+00}$