

Table 1: Mean and standard deviation values of MIGD obtained by five algorithms

Problems	$(n_t, \tau_t)$	DNSGAIII	DNSGAII	RND	MOEADKF	NHSS
DF1	(10, 5)	5.155e-2(5.565e-3)‡	8.469e-2(6.066e-3)‡	1.446e-1(1.416e-2)‡	7.427e-2(8.631e-3)‡	1.448e-1(9.048e-3)‡
	(10, 10)	5.155e-2(5.565e-3)‡	6.670e-2(5.845e-3)‡	4.491e-2(6.014e-3)‡	2.224e-2(2.022e-3)‡	3.584e-2(3.848e-3)‡
	(10, 20)	5.155e-2(5.565e-3)‡	5.155e-2(5.565e-3)‡	1.117e-2(9.251e-4)‡	8.250e-3(9.076e-4)‡	9.589e-3(8.768e-4)‡
DF2	(10, 5)	3.736e-2(4.613e-3)‡	5.788e-2(9.031e-3)‡	1.163e-1(1.251e-2)‡	9.454e-2(7.013e-3)‡	1.479e-1(1.218e-2)‡
	(10, 10)	3.736e-2(4.613e-3)‡	2.367e-2(4.065e-3)‡	4.080e-2(3.467e-3)‡	3.395e-2(3.266e-3)‡	4.155e-2(3.055e-3)‡
	(10, 20)	3.736e-2(4.613e-3)‡	3.736e-2(4.613e-3)‡	1.066e-2(1.003e-3)‡	9.102e-3(6.456e-4)‡	1.078e-2(4.016e-4)‡
DF3	(10, 5)	1.151e-1(1.389e-2)‡	7.008e-2(7.864e-4)‡	2.039e+0(1.652e-3)‡	2.040e+0(1.984e-3)‡	2.042e+0(4.449e-3)‡
	(10, 10)	1.151e-1(1.389e-2)‡	6.904e-2(9.627e-4)‡	2.031e+0(2.459e-4)‡	2.031e+0(7.254e-4)‡	2.032e+0(1.807e-3)‡
	(10, 20)	1.151e-1(1.389e-2)‡	1.151e-1(1.389e-2)‡	2.029e+0(6.915e-5)‡	2.029e+0(6.346e-5)‡	2.029e+0(2.121e-4)‡
DF4	(10, 5)	8.403e-1(4.365e-2)‡	8.318e-1(5.426e-2)‡	1.246e+0(1.380e-2)‡	1.231e+0(1.470e-2)‡	1.231e+0(1.018e-2)‡
	(10, 10)	8.403e-1(4.365e-2)‡	7.777e-1(6.445e-2)‡	1.211e+0(5.345e-3)‡	1.212e+0(4.647e-3)‡	1.207e+0(4.265e-3)‡
	(10, 20)	8.403e-1(4.365e-2)‡	8.403e-1(4.365e-2)‡	1.203e+0(1.040e-3)‡	1.203e+0(1.162e-3)‡	1.203e+0(7.399e-4)‡
DF5	(10, 5)	1.810e-1(8.606e-2)‡	7.270e-2(2.107e-2)‡	1.323e+0(1.978e-2)‡	1.250e+0(6.702e-3)‡	1.292e+0(9.828e-3)‡
	(10, 10)	1.810e-1(8.606e-2)‡	5.517e-2(5.657e-3)‡	1.233e+0(2.963e-3)‡	1.219e+0(2.066e-3)‡	1.227e+0(3.294e-3)‡
	(10, 20)	1.810e-1(8.606e-2)‡	1.810e-1(8.606e-2)‡	1.210e+0(6.759e-4)‡	1.208e+0(6.345e-4)‡	1.210e+0(9.811e-4)‡
DF6	(10, 5)	1.801e+0(3.344e-1)‡	1.551e+0(6.956e-1)‡	5.954e+0(8.351e-1)‡	5.428e+0(1.848e+0)‡	7.229e+0(9.596e-1)‡
	(10, 10)	1.801e+0(3.344e-1)‡	3.847e-1(1.783e-1)‡	2.442e+0(3.810e-1)‡	3.937e+0(9.499e-1)‡	4.449e+0(8.882e-1)‡
	(10, 20)	1.801e+0(3.344e-1)‡	1.801e+0(3.344e-1)‡	1.835e+0(3.387e-1)‡	3.890e+0(8.636e-1)‡	4.361e+0(5.688e-1)‡
DF7	(10, 5)	2.246e+9(6.406e+8)‡	2.927e+9(8.753e+8)‡	2.222e+0(6.902e-2)‡	2.119e+0(2.552e-2)‡	2.185e+0(3.956e-2)‡
	(10, 10)	2.246e+9(6.406e+8)‡	5.388e+9(4.679e+8)‡	2.078e+0(1.237e-2)‡	2.050e+0(2.050e-3)‡	2.058e+0(2.731e-3)‡
	(10, 20)	2.246e+9(6.406e+8)‡	2.246e+9(6.406e+8)‡	2.046e+0(1.083e-3)‡	2.044e+0(2.387e-4)‡	2.046e+0(8.140e-4)‡
DF8	(10, 5)	5.682e-2(4.546e-3)‡	8.744e-2(2.882e-3)‡	2.989e-2(4.526e-3)‡	2.790e-2(2.644e-3)‡	2.809e-2(3.757e-3)‡
	(10, 10)	5.682e-2(4.546e-3)‡	8.223e-2(3.359e-3)‡	1.885e-2(1.380e-3)‡	1.986e-2(8.631e-4)‡	1.896e-2(1.302e-3)‡
	(10, 20)	5.682e-2(4.546e-3)‡	5.682e-2(4.546e-3)‡	1.630e-2(5.576e-4)‡	1.569e-2(6.799e-4)‡	1.573e-2(5.174e-4)‡
DF9	(10, 5)	1.150e-1(5.355e-3)‡	1.141e-1(1.234e-2)‡	1.314e+0(8.930e-2)‡	1.139e+0(3.008e-2)‡	1.381e+0(9.476e-2)‡
	(10, 10)	1.150e-1(5.355e-3)‡	9.792e-2(4.295e-3)‡	1.061e+0(7.926e-3)‡	1.047e+0(5.616e-3)‡	1.068e+0(1.108e-2)‡
	(10, 20)	1.150e-1(5.355e-3)‡	1.150e-1(5.355e-3)‡	1.029e+0(8.517e-4)‡	1.028e+0(9.620e-4)‡	1.030e+0(9.879e-4)‡
DF10	(10, 5)	1.456e-1(1.511e-2)‡	2.052e-1(1.516e-2)‡	1.519e-1(1.264e-2)‡	1.495e-1(8.122e-3)‡	1.432e-1(1.109e-2)‡
	(10, 10)	1.456e-1(1.511e-2)‡	1.858e-1(7.779e-3)‡	1.338e-1(5.819e-3)‡	1.354e-1(4.071e-3)‡	1.241e-1(4.176e-3)‡
	(10, 20)	1.456e-1(1.511e-2)‡	1.456e-1(1.511e-2)‡	1.225e-1(5.287e-3)‡	1.246e-1(3.598e-3)‡	1.196e-1(2.051e-3)‡
DF11	(10, 5)	1.490e-1(7.857e-3)‡	4.836e-1(1.524e-2)‡	1.279e-1(6.757e-3)‡	1.297e-1(6.181e-3)‡	1.221e-1(4.006e-3)‡
	(10, 10)	1.490e-1(7.857e-3)‡	5.179e-1(2.002e-2)‡	1.039e-1(2.254e-3)‡	1.054e-1(2.232e-3)‡	1.051e-1(3.486e-3)‡
	(10, 20)	1.490e-1(7.857e-3)‡	1.490e-1(7.857e-3)‡	9.589e-2(4.595e-4)‡	9.595e-2(1.000e-3)‡	9.484e-2(5.497e-4)‡
DF12	(10, 5)	2.737e-1(7.102e-3)‡	2.650e-1(8.349e-3)‡	3.214e-1(8.119e-3)‡	3.177e-1(4.693e-3)‡	3.081e-1(6.514e-3)‡
	(10, 10)	2.737e-1(7.102e-3)‡	2.552e-1(8.180e-3)‡	2.942e-1(2.278e-3)‡	2.926e-1(4.699e-3)‡	2.899e-1(3.311e-3)‡
	(10, 20)	2.737e-1(7.102e-3)‡	2.737e-1(7.102e-3)‡	2.818e-1(2.952e-3)‡	2.837e-1(2.518e-3)‡	2.829e-1(8.307e-4)‡
DF13	(10, 5)	4.067e-1(4.021e-2)‡	2.269e-1(1.976e-2)‡	2.138e+0(4.558e-2)‡	2.085e+0(2.123e-2)‡	2.117e+0(2.578e-2)‡
	(10, 10)	4.067e-1(4.021e-2)‡	2.020e-1(9.967e-3)‡	2.054e+0(2.540e-2)‡	2.028e+0(1.635e-2)‡	2.035e+0(1.634e-2)‡
	(10, 20)	4.067e-1(4.021e-2)‡	4.067e-1(4.021e-2)‡	1.988e+0(1.591e-2)‡	1.988e+0(7.937e-3)‡	1.992e+0(1.422e-2)‡
DF14	(10, 5)	7.023e-1(1.889e-1)‡	4.567e-1(1.332e-1)‡	8.814e-1(1.770e-2)‡	8.525e-1(7.494e-3)‡	8.641e-1(1.424e-2)‡
	(10, 10)	7.023e-1(1.889e-1)‡	3.793e-1(6.376e-2)‡	8.360e-1(4.156e-3)‡	8.281e-1(4.766e-3)‡	8.299e-1(6.294e-3)‡
	(10, 20)	7.023e-1(1.889e-1)‡	7.023e-1(1.889e-1)‡	8.214e-1(2.005e-3)‡	8.192e-1(2.134e-3)‡	8.166e-1(1.940e-3)‡