Table 2. IGD metric values of the four algorithms on DTLZ1–DTLZ7, where the best results on each test instance are bolded

Problem	Obj.	Dec.	MOEA/D	MOEA/DVA	LMEA	EAGO
DTLZ1	5	100	2.1909E+00(1.63E-03) −	1.0056E+01(5.72E-05) −	**6.2360E-02(4.22E-04)** +	2.8348E-01(4.04E-03)
		500	9.7995E+00(4.30E-02) −	4.1455E+01(1.63E-04) −	**6.4216E-02(5.16E-04)** +	8.1869E-01(6.16E-03)
		1000	4.9758E+00(8.84E-01) −	8.7046E+01(4.66E-01) −	**6.4562E-02(4.19E-04)** +	6.4086E-01(5.93E-03)
	10	100	3.1757E+01(4.90E+00) −	3.0555E+01(1.79E-02) −	**1.0524E-01(4.87E-03)** +	1.3804E-01(7.03E-03)
		500	3.2376E+02(1.01E+02) −	1.5349E+02(1.14E-02) −	**1.0813E-01(6.05E-04)** +	1.2807E-01(3.45E-04)
		1000	5.2867E+02(2.16E+00) −	2.3983E+02(1.20E+01) −	**1.1219E-01(8.75E-04)** +	1.2774E-01(2.20E-04)
DTLZ2	5	100	1.9490E-01(2.26E-08) −	2.9042E-01(9.26E-08) −	1.9126E-01(2.14E-03) −	**1.8791E-01(7.50E-05)**
		500	1.9490E-01(5.31E-08) −	2.9044E-01(3.17E-08) −	1.9374E-01(2.29E-03) −	**1.9322E-01(2.64E-03)**
		1000	1.9421E-01(6.90E-04) −	2.9047E-01(5.00E-06) −	1.9088E-01(1.10E-03) −	**1.8315E-01(5.00E-05)**
	10	100	4.2219E-01(1.81E-02) −	6.1598E-01(5.13E-02) −	3.9618E-01(1.48E-02) −	**3.8580E-01(1.30E-04)**
		500	4.2213E-01(8.63E-03) −	5.8377E-01(3.53E-04) −	**3.9339E-01(1.76E-02)** +	3.9883E-01(6.55E-04)
		1000	4.2314E-01(1.00E-03) −	6.0197E-01(1.60E-02) −	3.9338E-01(8.69E-04) −	**3.9100E-01(5.30E-04)**
DTLZ3	5	100	8.3591E+00(2.49E-03) −	2.9242E+01(5.92E-05) −	1.9540E-01(2.14E-03) −	**1.9499E-01(6.54E-03)**
		500	1.3009E+02(1.97E-01) −	1.5345E+02(1.01E-04) −	**2.0058E-01(4.44E-03)** +	4.1153E+00(2.47E-01)
		1000	1.6742E+02(2.93E+01) −	2.7859E+02(1.06E+01) −	**2.0518E-01(3.35E-04)** +	3.5745E+00(3.12E-01)
	10	100	1.5067E+02(4.87E-02) −	1.2187E+02(3.77E-02) −	3.9335E-01(3.77E-02) −	**3.9303E-01(1.91E-03)**
		500	1.3511E+03(2.78E+02) −	6.5384E+02(9.88E-02) −	4.0865E-01(9.88E-02) −	**3.9984E-01(2.80E-04)**
		1000	2.2226E+03(1.32E+01) −	1.0482E+03(7.50E+00) −	4.1485E-01(2.90E-04) −	**3.9108E-01(1.13E-03)**
DTLZ4	5	100	1.1081E+00(2.50E-01) −	6.3366E-01(1.29E-01) −	**1.9338E-01(1.55E-02)** +	2.7075E-01(2.42E-02)
		500	4.2067E-01(1.18E-01) −	6.3368E-01(1.29E-01) −	**1.9164E-01(2.46E-02)** +	2.6051E-01(6.20E-03)
		1000	3.0779E-01(1.13E-01) −	6.3474E-01(1.00E-03) −	5.7542E-01(6.99E-02) −	**2.6215E-01(1.41E-03)**
	10	100	6.2007E-01(3.18E-02) −	7.1535E-01(3.33E-02) −	**4.0188E-01(2.47e-02)** +	4.9721E-01(4.65E-03)
		500	6.1999E-01(2.93E-02) −	7.8950E-01(5.83E-05) −	**4.0043E-01(3.89e-02)** +	4.8001E-01(1.45E-03)
		1000	6.2287E-01(2.80E-03) −	7.0918E-01(2.27E-02) −	4.8719E-01(2.23E-02) −	**4.5746E-01(1.77E-03)**
DTLZ5	5	100	3.2795E-02(9.31E-07) −	4.8810E-01(5.06E-04) −	4.2844E-03(1.44E-04) −	**4.1806E-03(7.06E-05)**
		500	3.2793E-02(1.04E-06) −	1.8921E-01(5.20E-08) −	**4.0265E-03(1.48E-04)** +	4.7423E-03(1.14E-04)
		1000	3.2795E-02(5.00E-07) −	5.7320E-02(3.47E-02) −	4.2209E-03(1.73E-04) −	**4.1726E-03(1.02E-04)**
	10	100	1.9884E-02(2.41E-04) −	3.1085E+00(1.87E-04) −	2.5612E-03(6.95E-05) −	**2.4812E-03(8.00E-05)**
		500	1.9885E-02(4.61E-04) −	1.0974E+00(3.30E-04) −	**2.5242E-03(1.96E-05)** +	3.5642E-03(1.06E-04)
		1000	1.9878E-02(1.00E-06) −	1.1377E+00(1.53E-01) −	**2.4686E-03(7.35E-06)** +	2.8748E-03(4.20E-05)
DTLZ6	5	100	2.0741E-01(3.14E-02) −	5.9687E-01(2.43E-06) −	3.9526E-03(2.14E-04) −	**3.9479E-03(3.68E-04)**
		500	1.2960E+00(1.04E-01) −	2.9873E+00(4.25E-07) −	**4.0104E-03(1.22E-03)** +	6.2329E-03(1.28E-04)
		1000	5.2191E+00(1.62E-02) −	3.4444E+00(9.43E-06) −	4.4128E-03(3.16E-04) −	**3.9438E-03(1.34E-04)**
	10	100	1.1803E-01(9.81E-02) −	2.1714E+00(4.09E-02) −	2.2089E-03(5.11E-04) −	**1.7114E-03(1.40E-05)**
		500	1.1966E+00(2.52E-01) −	1.6027E+01(5.33E-02) −	1.5958E-03(3.55E-05) −	**1.5435E-03(5.05E-06)**
		1000	3.1999E+00(2.96E-01) −	4.4972E+01(2.72E+00) −	2.8410E-03(1.27E-03) −	**1.5603E-03(4.23E-05)**
DTLZ7	5	100	7.0560E-01(2.57E-02) −	3.8346E-01(2.51E-06) −	**3.1717E-01(1.10E-02)** +	3.2603E-01(2.45E-03)

		500	7.0574E-01(3.73E-07) −	3.8147E-01(4.57E-07) −	**3.3236E-01(8.53E-03)** +	3.3965E-01(1.18E-03)
		1000	7.0589E-01(1.00E-05) −	3.8148E-01(7.57E-07) −	3.2892E-01(6.80E-03) −	**3.1768E-01(8.55E-04)**
		100	2.8119E+00(1.37E+00) −	1.0258E+00(7.84E-02) −	**9.0041E-01(6.40E-03)** +	9.2919E-01(3.02E-02)
	10	500	2.5544E+00(6.94E-01) −	9.6536E-01(1.02E-01) +	**8.7646E-01(1.27E-02)** +	9.7050E-01(7.25E-03)
		1000	2.5550E+00(1.05E-03) −	9.6057E-01(3.70E-03) +	**8.8562E-01(1.96E-02)** +	9.8936E-01(1.24E-02)
+/−			0 / 42	2 / 40	22 / 20	

"+" and "-" respectively indicate that the result is better and worse than EAGO