

Results for instances from collection  
Dispersion-QKP with strategy geo

File dispersion-qkp-geo\_0300\_005.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	2,351

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	4,382.6	1.57	1.13	<b>0.00</b>	—	30.75	41.61	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.8	120.0	3.7	1.4	0.9	8.0
5.0	8,160.5	0.58	0.32	0.18	—	25.59	8.79	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.4	4.2	120.0	6.1	1.4	0.4	5.0
10.0	15,421.0	0.86	0.60	<b>0.00</b>	—	42.70	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.7	3.7	120.0	7.5	120.0	0.3	13.0
25.0	35,680.6	0.41	0.46	0.02	—	43.82	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	4.6	120.0	12.5	120.0	0.8	9.0
50.0	67,858.7	0.32	0.17	<b>0.00</b>	—	30.13	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.5	4.4	120.0	12.7	120.0	2.4	36.0
75.0	99,014.8	0.09	<b>0.00</b>	<b>0.00</b>	—	22.36	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.9	2.0	120.0	11.1	120.0	0.2	13.0
Avg		0.64	0.45	0.03	—	32.56	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	3.6	120.0	8.9	80.5	0.8	14.0
Min		0.09	<b>0.00</b>	<b>0.00</b>	—	22.36	8.79	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.0	120.0	3.7	1.4	0.2	5.0
Max		1.57	1.13	0.18	—	43.82	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.9	4.6	120.0	12.7	120.0	2.4	36.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	23
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0044
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0160
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0086

File dispersion-qkp-geo\_0300\_010.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	4,388

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	8,829.2	0.31	0.31	<b>0.00</b>	—	157.29	68.98	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.6	120.0	3.0	1.3	0.4	8.0
5.0	15,161.4	0.87	0.66	<b>0.00</b>	—	173.61	8.82	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.2	120.0	3.9	2.4	1.6	30.0
10.0	27,152.5	0.11	0.11	<b>0.00</b>	—	137.10	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.7	4.1	120.0	6.8	120.0	4.2	56.0
25.0	65,001.9	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	90.64	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.1	7.3	120.0	11.4	120.0	1.7	21.0
50.0	126,886.4	0.19	0.02	<b>0.00</b>	—	57.16	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.5	4.0	120.0	10.9	120.0	2.1	55.0
75.0	184,706.0	0.24	0.12	<b>0.00</b>	—	32.91	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.9	2.4	120.0	10.5	120.0	0.7	26.0
Avg		0.29	0.20	<b>0.00</b>	—	108.12	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	3.9	120.0	7.7	80.6	1.8	32.7
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	32.91	8.82	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.4	120.0	3.0	1.3	0.4	8.0
Max		0.87	0.66	<b>0.00</b>	—	173.61	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.9	7.3	120.0	11.4	120.0	4.2	56.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	15
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0130
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0160
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0082

File dispersion-qkp-geo\_0300\_025.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	11,110

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best of OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	18,008.6	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	410.29	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.9	120.0	1.9	120.0	0.8	7.0
5.0	33,657.9	<b>0.00</b>	0.14	<b>0.00</b>	—	301.99	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.5	120.0	3.7	120.0	13.9	60.0
10.0	66,196.1	0.38	<b>0.00</b>	<b>0.00</b>	—	186.19	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.7	5.4	120.0	6.8	120.0	15.7	120.0
25.0	160,146.9	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	169.33	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.1	8.0	120.0	9.3	120.0	9.0	120.0
50.0	311,752.1	0.10	0.09	<b>0.00</b>	—	78.20	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.6	3.4	120.0	9.4	120.0	15.5	120.0
75.0	457,767.4	0.24	0.08	<b>0.00</b>	—	31.90	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.9	2.0	120.0	10.7	120.0	3.6	120.0
Avg		0.12	0.05	<b>0.00</b>	—	196.32	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	4.2	120.0	7.0	120.0	9.7	91.2
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	31.90	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.0	120.0	1.9	120.0	0.8	7.0
Max		0.38	0.14	<b>0.00</b>	—	410.29	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.9	8.0	120.0	10.7	120.0	15.7	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	14
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0173
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0150
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0078

File dispersion-qkp-geo\_0300\_050.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	22,346

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	35,472.5	0.27	0.07	<b>0.00</b>	—	354.77	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	3.1	120.0	3.1	120.0	7.5	59.0
5.0	67,862.5	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	376.86	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.3	120.0	4.4	120.0	13.1	120.0
10.0	129,880.8	1.05	<b>0.00</b>	<b>0.00</b>	—	297.93	—	<b>0.00</b>	0.21	<b>0.00</b>	0.7	7.2	120.0	7.1	120.0	89.0	120.0
25.0	323,564.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	203.31	—	<b>0.00</b>	0.13	<b>0.00</b>	1.2	5.2	120.0	8.1	120.0	12.0	120.0
50.0	626,497.3	0.43	0.05	<b>0.00</b>	—	81.84	—	<b>0.00</b>	0.28	<b>0.01</b>	1.5	4.2	120.0	8.5	120.0	53.1	120.0
75.0	923,919.0	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	30.83	—	<b>0.00</b>	0.16	<b>0.00</b>	1.9	2.3	120.0	9.8	120.0	9.9	120.0
Avg		0.29	0.02	<b>0.00</b>	—	224.26	—	<b>0.00</b>	0.13	<b>0.00</b>	1.0	4.2	120.0	6.8	120.0	30.8	109.8
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	30.83	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.3	120.0	3.1	120.0	7.5	59.0
Max		1.05	0.07	<b>0.00</b>	—	376.86	—	<b>0.00</b>	0.28	<b>0.01</b>	1.9	7.2	120.0	9.8	120.0	89.0	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0333
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0150
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0085

File dispersion-qkp-geo\_0300\_075.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	33,590

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	54,838.8	0.93	0.18	<b>0.00</b>	—	429.22	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	0.3	3.0	120.0	3.3	120.0	13.2	83.0
5.0	105,730.5	0.64	<b>0.00</b>	<b>0.00</b>	—	438.89	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.3	120.0	4.7	120.0	49.8	120.0
10.0	199,845.1	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	333.68	—	<b>0.00</b>	1.56	<b>0.00</b>	0.7	7.2	120.0	7.2	120.0	40.0	120.0
25.0	480,039.5	0.16	0.04	<b>0.00</b>	—	241.10	—	<b>0.00</b>	0.23	<b>0.01</b>	1.1	5.2	120.0	7.6	120.0	120.2	120.0
50.0	951,522.6	0.41	<b>0.00</b>	<b>0.00</b>	—	88.05	—	<b>0.00</b>	0.26	<b>0.00</b>	1.6	4.9	120.0	8.6	120.0	57.1	120.0
75.0	1,401,988.9	0.13	0.06	<b>0.00</b>	—	33.13	—	<b>0.00</b>	0.21	<b>0.00</b>	1.8	2.2	120.0	9.7	120.0	22.8	120.0
Avg		0.38	0.05	<b>0.00</b>	—	260.68	—	<b>0.00</b>	0.38	<b>0.00</b>	1.0	4.3	120.0	6.8	120.0	50.5	113.8
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	33.13	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.2	120.0	3.3	120.0	13.2	83.0
Max		0.93	0.18	<b>0.00</b>	—	438.89	—	<b>0.00</b>	1.56	<b>0.01</b>	1.8	7.2	120.0	9.7	120.0	120.2	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0544
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0150
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0082

File dispersion-qkp-geo\_0300\_100.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	44,850

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	72,119.8	2.98	<b>0.00</b>	<b>0.00</b>	—	497.27	350.29	<b>0.00</b>	0.83	<b>0.01</b>	0.4	3.1	120.0	3.4	2.9	15.9	120.0
5.0	140,460.0	0.11	0.06	<b>0.00</b>	—	606.36	821.40	<b>0.00</b>	1.04	<b>0.00</b>	0.5	3.3	120.0	4.3	2.8	28.9	120.0
10.0	269,956.6	0.10	0.04	<b>0.00</b>	—	369.67	1,292.27	<b>0.00</b>	1.27	<b>0.00</b>	0.7	6.7	120.0	7.1	2.4	36.8	120.0
25.0	667,497.5	0.37	0.04	<b>0.00</b>	—	288.15	—	0.03	0.46	<b>0.00</b>	1.2	4.0	120.0	7.9	120.0	120.3	120.0
50.0	1,256,002.6	0.28	<b>0.00</b>	<b>0.00</b>	—	93.13	—	<b>0.00</b>	0.27	<b>0.00</b>	1.6	4.0	120.0	8.2	120.0	41.1	120.0
75.0	1,822,703.3	0.02	<b>0.00</b>	<b>0.00</b>	—	30.74	—	<b>0.00</b>	0.59	<b>0.00</b>	1.9	2.8	120.0	9.8	120.0	45.3	120.0
Avg		0.64	0.02	<b>0.00</b>	—	314.22	—	0.01	0.74	<b>0.00</b>	1.0	4.0	120.0	6.8	61.4	48.1	120.0
Min		0.02	<b>0.00</b>	<b>0.00</b>	—	30.74	350.29	<b>0.00</b>	0.27	<b>0.00</b>	0.4	2.8	120.0	3.4	2.4	15.9	120.0
Max		2.98	0.06	<b>0.00</b>	—	606.36	—	0.03	1.27	<b>0.01</b>	1.9	6.7	120.0	9.8	120.0	120.3	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0669
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0320
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0079

File dispersion-qkp-geo\_0500\_005.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	6,287

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	10,279.5	0.01	0.96	<b>0.00</b>	—	88.22	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	5.2	120.0	23.4	120.0	0.6	25.0
5.0	19,006.0	0.80	0.91	<b>0.00</b>	—	88.80	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.6	5.4	120.0	30.0	120.0	2.5	61.0
10.0	36,218.0	0.38	0.06	<b>0.00</b>	—	74.70	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	2.2	7.1	120.0	49.8	120.0	3.2	120.0
25.0	88,661.2	0.20	0.04	<b>0.00</b>	—	72.79	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	3.7	8.4	120.0	84.1	120.0	4.9	96.0
50.0	175,132.8	0.07	0.05	<b>0.00</b>	—	49.03	—	<b>0.00</b>	0.02	<b>0.01</b>	5.3	5.5	120.0	71.7	120.0	1.2	120.0
75.0	255,337.1	0.02	0.01	<b>0.00</b>	—	24.74	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	6.3	3.4	120.0	69.1	120.0	0.7	57.0
Avg		0.25	0.34	<b>0.00</b>	—	66.38	—	<b>0.00</b>	0.00	<b>0.01</b>	3.4	5.8	120.0	54.7	120.0	2.2	79.8
Min		0.01	0.01	<b>0.00</b>	—	24.74	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	3.4	120.0	23.4	120.0	0.6	25.0
Max		0.80	0.96	<b>0.00</b>	—	88.80	—	<b>0.00</b>	0.02	<b>0.01</b>	6.3	8.4	120.0	84.1	120.0	4.9	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	19
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0104
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0090



File dispersion-qkp-geo\_0500\_010.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	12,436

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	16,851.5	0.13	0.14	<b>0.00</b>	—	231.32	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.0	6.1	120.0	15.9	120.0	12.0	112.0
5.0	33,465.0	0.13	0.02	<b>0.00</b>	—	241.82	—	<b>0.00</b>	0.10	<b>0.00</b>	1.6	10.8	120.0	23.2	120.0	17.1	120.0
10.0	66,376.0	0.35	0.39	<b>0.00</b>	—	145.12	—	<b>0.00</b>	0.23	<b>0.01</b>	2.3	6.7	120.0	45.0	120.0	26.4	120.0
25.0	168,126.2	0.25	0.07	<b>0.00</b>	—	120.69	—	<b>0.00</b>	0.08	<b>0.01</b>	3.7	10.6	120.0	71.6	120.0	20.9	120.0
50.0	338,629.6	0.03	0.03	<b>0.00</b>	—	73.75	—	0.01	0.10	<b>0.01</b>	5.2	6.4	120.0	53.8	120.0	23.8	120.0
75.0	506,632.2	0.04	0.01	<b>0.00</b>	—	26.31	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	6.2	3.8	120.0	64.1	120.0	4.6	120.0
Avg		0.15	0.11	<b>0.00</b>	—	139.84	—	0.00	0.09	<b>0.01</b>	3.3	7.4	120.0	45.6	120.0	17.5	118.7
Min		0.03	0.01	<b>0.00</b>	—	26.31	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	3.8	120.0	15.9	120.0	4.6	112.0
Max		0.35	0.39	<b>0.00</b>	—	241.82	—	0.01	0.23	<b>0.01</b>	6.2	10.8	120.0	71.6	120.0	26.4	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0197
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0091

File dispersion-qkp-geo\_0500\_025.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	30,983

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	39,971.0	<b>0.00</b>	0.20	<b>0.00</b>	—	283.60	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.1	2.3	120.0	20.8	120.0	49.6	120.0
5.0	81,928.3	0.18	<b>0.00</b>	<b>0.00</b>	—	313.70	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.6	2.5	120.0	29.6	120.0	120.3	120.0
10.0	162,304.2	0.14	0.06	<b>0.00</b>	—	300.95	—	4.45	0.23	<b>0.01</b>	2.3	10.4	120.0	46.6	120.0	120.1	120.0
25.0	417,089.5	0.11	<b>0.00</b>	<b>0.00</b>	—	237.38	—	<b>0.00</b>	0.12	<b>0.01</b>	3.7	9.5	120.0	47.3	120.0	121.0	120.0
50.0	846,009.0	0.21	0.03	<b>0.00</b>	—	103.45	—	0.01	0.10	<b>0.01</b>	5.3	6.1	120.0	44.9	120.0	120.9	120.0
75.0	1,266,974.9	<b>0.00</b>	0.01	<b>0.00</b>	—	31.60	—	<b>0.00</b>	0.41	<b>0.01</b>	6.3	3.3	120.0	62.0	120.0	10.3	120.0
Avg		0.11	0.05	<b>0.00</b>	—	211.78	—	0.74	0.14	<b>0.01</b>	3.4	5.7	120.0	41.8	120.0	90.4	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	31.60	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	2.3	120.0	20.8	120.0	10.3	120.0
Max		0.21	0.20	<b>0.00</b>	—	313.70	—	4.45	0.41	<b>0.01</b>	6.3	10.4	120.0	62.0	120.0	121.0	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	6
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0556
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0101

File dispersion-qkp-geo\_0500\_050.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	62,868

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	80,394.6	0.09	0.09	<b>0.00</b>	—	677.84	—	0.09	0.20	<b>0.01</b>	1.2	2.2	120.0	16.7	120.0	120.1	120.0
5.0	164,824.7	0.23	0.12	<b>0.00</b>	—	443.42	—	3.91	0.42	<b>0.00</b>	1.6	2.5	120.0	31.7	120.0	120.1	120.0
10.0	330,688.7	0.03	<b>0.00</b>	<b>0.00</b>	—	378.36	—	<b>0.00</b>	0.32	<b>0.01</b>	2.5	10.5	120.0	45.2	120.0	121.8	120.0
25.0	825,678.4	0.16	<b>0.00</b>	<b>0.00</b>	—	265.85	—	2.73	0.26	<b>0.01</b>	3.9	9.0	120.0	40.9	120.0	120.1	120.0
50.0	1,674,335.7	0.39	<b>0.00</b>	<b>0.00</b>	—	102.04	—	0.42	0.21	<b>0.01</b>	5.3	5.1	120.0	43.3	120.0	120.1	120.0
75.0	2,517,928.6	0.21	<b>0.00</b>	<b>0.00</b>	—	32.17	—	<b>0.00</b>	0.43	<b>0.01</b>	6.3	3.9	120.0	60.2	120.0	88.9	120.0
Avg		0.19	0.03	<b>0.00</b>	—	316.61	—	1.19	0.31	<b>0.01</b>	3.5	5.5	120.0	39.7	120.0	115.2	120.0
Min		0.03	<b>0.00</b>	<b>0.00</b>	—	32.17	—	<b>0.00</b>	0.20	<b>0.00</b>	1.2	2.2	120.0	16.7	120.0	88.9	120.0
Max		0.39	0.12	<b>0.00</b>	—	677.84	—	3.91	0.43	<b>0.01</b>	6.3	10.5	120.0	60.2	120.0	121.8	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	4
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0944
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0320
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0094

File dispersion-qkp-geo\_0500\_075.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	93,584

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	125,730.7	0.12	0.12	<b>0.00</b>	—	639.04	—	1,154.23	0.20	<b>0.01</b>	1.1	2.8	120.0	18.7	120.0	120.1	120.0
5.0	252,651.6	1.33	0.53	<b>0.00</b>	—	504.81	—	1,072.69	0.58	<b>0.00</b>	1.6	3.3	120.0	32.2	120.0	120.1	120.0
10.0	492,006.1	0.49	0.10	<b>0.00</b>	—	524.41	—	2.80	1.53	<b>0.01</b>	2.3	10.1	120.0	37.0	120.0	120.1	120.0
25.0	1,249,410.1	0.02	0.01	<b>0.00</b>	—	260.31	—	41.62	0.97	<b>0.01</b>	3.7	12.1	120.0	42.7	120.0	120.1	120.0
50.0	2,508,630.9	0.09	0.01	<b>0.00</b>	—	98.76	—	36.54	0.62	<b>0.01</b>	5.2	4.7	120.0	40.5	120.0	120.0	120.0
75.0	3,735,354.4	0.11	<b>0.00</b>	<b>0.00</b>	—	29.46	—	19.42	0.78	<b>0.01</b>	6.4	4.0	120.0	60.0	120.0	120.1	120.0
Avg		0.36	0.13	<b>0.00</b>	—	342.80	—	387.88	0.78	<b>0.01</b>	3.4	6.2	120.0	38.5	120.0	120.1	120.0
Min		0.02	<b>0.00</b>	<b>0.00</b>	—	29.46	—	2.80	0.20	<b>0.00</b>	1.1	2.8	120.0	18.7	120.0	120.0	120.0
Max		1.33	0.53	<b>0.00</b>	—	639.04	—	1,154.23	1.53	<b>0.01</b>	6.4	12.1	120.0	60.0	120.0	120.1	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	4
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.1456
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0470
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0091

File dispersion-qkp-geo\_0500\_100.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	124,750

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	148,301.2	0.36	0.20	<b>0.00</b>	—	795.52	—	2,784.87	0.63	<b>0.01</b>	1.2	2.5	120.0	18.0	120.0	120.1	120.0
5.0	301,338.9	0.35	0.07	<b>0.00</b>	—	495.90	—	1,333.34	0.35	<b>0.00</b>	1.7	2.3	120.0	30.4	120.0	120.1	120.0
10.0	609,934.3	0.47	0.10	<b>0.00</b>	—	444.05	—	631.34	0.25	<b>0.01</b>	2.4	9.9	120.0	39.9	120.0	120.1	120.0
25.0	1,604,214.3	0.60	<b>0.00</b>	<b>0.00</b>	—	268.05	—	266.56	0.36	<b>0.01</b>	3.8	13.4	120.0	39.5	120.0	120.1	120.0
50.0	3,300,381.5	0.31	0.02	<b>0.00</b>	—	103.50	—	101.92	0.38	<b>0.01</b>	5.3	5.8	120.0	41.7	120.0	120.1	120.0
75.0	4,964,219.9	0.09	0.02	<b>0.00</b>	—	31.73	—	29.14	0.43	<b>0.01</b>	6.4	4.1	120.0	59.6	120.0	120.1	120.0
Avg		0.36	0.07	<b>0.00</b>	—	356.46	—	857.86	0.40	<b>0.01</b>	3.5	6.3	120.0	38.2	120.0	120.1	120.0
Min		0.09	<b>0.00</b>	<b>0.00</b>	—	31.73	—	29.14	0.25	<b>0.00</b>	1.2	2.3	120.0	18.0	120.0	120.1	120.0
Max		0.60	0.20	<b>0.00</b>	—	795.52	—	2,784.87	0.63	<b>0.01</b>	6.4	13.4	120.0	59.6	120.0	120.1	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	5
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.1985
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0094

File dispersion-qkp-geo\_1000\_005.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	25,194

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	34,115.6	0.22	0.52	<b>0.00</b>	—	—	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	7.4	10.0	120.0	120.0	120.0	58.7	120.0
5.0	67,342.3	0.33	0.26	<b>0.00</b>	—	—	—	<b>0.00</b>	0.15	<b>0.01</b>	10.8	13.9	120.0	120.0	120.0	121.0	120.0
10.0	136,118.0	0.10	0.07	<b>0.00</b>	—	—	—	<b>0.00</b>	0.07	<b>0.01</b>	15.7	15.1	120.0	120.0	120.0	120.8	120.0
25.0	345,626.7	0.04	0.04	<b>0.00</b>	—	—	—	<b>0.00</b>	0.10	<b>0.02</b>	24.5	14.2	120.0	120.0	120.0	56.4	120.0
50.0	688,278.9	0.03	0.02	<b>0.00</b>	—	—	—	<b>0.00</b>	0.13	<b>0.02</b>	33.7	10.3	120.0	120.0	120.0	12.3	120.0
75.0	1,017,050.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.24	<b>0.01</b>	40.2	8.8	120.0	120.0	120.0	4.7	120.0
Avg		0.12	0.15	<b>0.00</b>	—	—	—	<b>0.00</b>	0.11	<b>0.01</b>	22.0	12.0	120.0	120.0	120.0	62.3	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	7.4	8.8	120.0	120.0	120.0	4.7	120.0
Max		0.33	0.52	<b>0.00</b>	—	—	—	<b>0.00</b>	0.24	<b>0.02</b>	40.2	15.1	120.0	120.0	120.0	121.0	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	14
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0440
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0630
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0106

File dispersion-qkp-geo\_1000\_010.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	50,127

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	67,443.8	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.55	<b>0.03</b>	7.7	10.1	120.0	120.0	120.0	113.1	120.0
5.0	137,244.2	<b>0.00</b>	0.06	<b>0.00</b>	—	—	—	<b>0.00</b>	0.06	<b>0.01</b>	11.0	11.4	120.0	120.0	120.0	91.2	120.0
10.0	273,434.9	0.12	0.03	<b>0.00</b>	—	—	—	0.07	0.28	<b>0.01</b>	15.6	10.2	120.0	120.0	120.0	121.0	120.0
25.0	688,048.8	0.04	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.17	<b>0.02</b>	25.2	14.3	120.0	120.0	120.0	119.2	120.0
50.0	1,363,613.3	0.01	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.12	<b>0.02</b>	34.4	11.1	120.0	120.0	120.0	121.3	120.0
75.0	2,032,855.5	0.07	0.02	<b>0.00</b>	—	—	—	<b>0.00</b>	0.32	<b>0.02</b>	41.2	10.1	120.0	120.0	120.0	14.3	120.0
Avg		0.04	0.02	<b>0.00</b>	—	—	—	0.01	0.25	<b>0.02</b>	22.5	11.2	120.0	120.0	120.0	96.7	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.06	<b>0.01</b>	7.7	10.1	120.0	120.0	120.0	14.3	120.0
Max		0.12	0.06	<b>0.00</b>	—	—	—	0.07	0.55	<b>0.03</b>	41.2	14.3	120.0	120.0	120.0	121.3	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	6
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0829
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0780
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0108

File dispersion-qkp-geo\_1000\_025.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	124,947

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	157,442.1	0.23	0.06	<b>0.00</b>	—	—	—	2,178.24	0.55	<b>0.03</b>	7.7	10.1	120.0	120.0	120.0	120.4	120.0
5.0	327,642.8	0.22	0.05	<b>0.00</b>	—	—	—	1,479.10	0.35	<b>0.01</b>	11.2	8.3	120.0	120.0	120.0	120.3	120.0
10.0	665,664.5	0.17	0.04	<b>0.00</b>	—	—	—	736.56	0.24	<b>0.01</b>	15.7	10.1	120.0	120.0	120.0	120.3	120.0
25.0	1,680,598.4	0.02	0.01	<b>0.00</b>	—	—	—	282.02	0.20	<b>0.02</b>	25.3	24.3	120.0	120.0	120.0	120.3	120.0
50.0	3,361,014.7	0.02	0.01	<b>0.00</b>	—	—	—	97.11	0.30	<b>0.02</b>	34.4	10.7	120.0	120.0	120.0	120.3	120.0
75.0	5,042,107.5	0.03	0.01	<b>0.00</b>	—	—	—	0.01	0.35	<b>0.01</b>	40.7	9.2	120.0	120.0	120.0	22.9	120.0
Avg		0.12	0.03	<b>0.00</b>	—	—	—	795.51	0.33	<b>0.02</b>	22.5	12.1	120.0	120.0	120.0	104.1	120.0
Min		0.02	0.01	<b>0.00</b>	—	—	—	0.01	0.20	<b>0.01</b>	7.7	8.3	120.0	120.0	120.0	22.9	120.0
Max		0.23	0.06	<b>0.00</b>	—	—	—	2,178.24	0.55	<b>0.03</b>	40.7	24.3	120.0	120.0	120.0	120.4	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	6
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.2054
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0940
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0108



File dispersion-qkp-geo\_1000\_050.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	249,988

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	315,133.9	0.72	0.06	<b>0.00</b>	—	—	—	2,224.56	0.50	<b>0.02</b>	8.0	10.5	120.0	120.0	120.0	120.5	120.0
5.0	647,545.7	0.11	<b>0.00</b>	<b>0.00</b>	—	—	—	1,586.98	1.05	<b>0.01</b>	11.7	10.4	120.0	120.0	120.0	120.4	120.0
10.0	1,300,651.4	0.02	<b>0.00</b>	0.01	—	—	—	784.02	0.87	<b>0.01</b>	16.6	10.3	120.0	120.0	120.0	120.4	120.0
25.0	3,272,974.1	0.04	0.01	<b>0.00</b>	—	—	—	292.46	0.73	<b>0.02</b>	26.0	15.8	120.0	120.0	120.0	120.4	120.0
50.0	6,623,882.2	0.02	0.01	<b>0.00</b>	—	—	—	105.91	0.70	<b>0.02</b>	35.2	13.0	120.0	120.0	120.0	120.3	120.0
75.0	9,992,797.1	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.67	<b>0.02</b>	41.5	9.2	120.0	120.0	120.0	67.8	120.0
Avg		0.15	0.01	<b>0.00</b>	—	—	—	832.32	0.75	<b>0.02</b>	23.2	11.5	120.0	120.0	120.0	111.6	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.50	<b>0.01</b>	8.0	9.2	120.0	120.0	120.0	67.8	120.0
Max		0.72	0.06	<b>0.01</b>	—	—	—	2,224.56	1.05	<b>0.02</b>	41.5	15.8	120.0	120.0	120.0	120.5	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	5
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.4091
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1100
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0106

File dispersion-qkp-geo\_1000\_075.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	374,545

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	461,229.7	0.17	0.09	<b>0.00</b>	—	—	—	3,375.29	1.25	<b>0.03</b>	7.9	11.8	120.0	120.0	120.0	120.5	120.0
5.0	940,673.6	0.23	0.01	<b>0.00</b>	—	—	—	1,756.77	0.86	<b>0.01</b>	11.5	8.2	120.0	120.0	120.0	120.3	120.0
10.0	1,912,117.9	0.06	<b>0.00</b>	<b>0.00</b>	—	—	—	821.20	0.62	<b>0.01</b>	16.1	11.3	120.0	120.0	120.0	120.4	120.0
25.0	4,928,051.4	0.27	0.02	<b>0.00</b>	—	—	—	287.88	1.10	<b>0.02</b>	25.9	24.9	120.0	120.0	120.0	120.4	121.0
50.0	9,931,092.3	0.18	0.01	<b>0.00</b>	—	—	—	104.74	1.09	<b>0.02</b>	35.4	12.0	120.0	120.0	120.0	120.4	120.0
75.0	14,869,330.0	0.01	0.01	<b>0.00</b>	—	—	—	33.91	0.86	<b>0.01</b>	41.9	10.4	120.0	120.0	120.0	120.4	120.0
Avg		0.15	0.02	<b>0.00</b>	—	—	—	1,063.30	0.96	<b>0.02</b>	23.1	13.1	120.0	120.0	120.0	120.4	120.2
Min		0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	33.91	0.62	<b>0.01</b>	7.9	8.2	120.0	120.0	120.0	120.3	120.0
Max		0.27	0.09	<b>0.00</b>	—	—	—	3,375.29	1.25	<b>0.03</b>	41.9	24.9	120.0	120.0	120.0	120.5	121.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	7
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.6088
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1250
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0114

File dispersion-qkp-geo\_1000\_100.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	499,500

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	627,836.0	0.62	0.29	<b>0.00</b>	—	—	—	1,895.11	1.86	<b>0.02</b>	7.9	11.4	120.0	120.0	120.0	120.4	121.0
5.0	1,290,218.6	0.48	0.16	<b>0.00</b>	—	—	—	1,317.20	1.17	<b>0.01</b>	11.5	30.2	120.0	120.0	120.0	120.5	120.0
10.0	2,617,521.8	0.14	0.02	<b>0.00</b>	—	—	—	818.11	1.71	<b>0.01</b>	16.6	13.0	120.0	120.0	120.0	120.4	121.0
25.0	6,573,200.3	0.30	<b>0.00</b>	<b>0.00</b>	—	—	—	302.93	2.21	<b>0.02</b>	26.0	22.2	120.0	120.0	120.0	120.4	121.0
50.0	13,181,466.4	0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	104.09	1.85	<b>0.02</b>	34.8	12.3	120.0	120.0	120.0	120.5	121.0
75.0	19,869,110.7	0.12	0.07	<b>0.00</b>	—	—	—	39.40	0.93	<b>0.01</b>	40.5	9.7	120.0	120.0	120.0	120.6	120.0
Avg		0.28	0.09	<b>0.00</b>	—	—	—	746.14	1.62	<b>0.02</b>	22.9	16.4	120.0	120.0	120.0	120.5	120.7
Min		0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	39.40	0.93	<b>0.01</b>	7.9	9.7	120.0	120.0	120.0	120.4	120.0
Max		0.62	0.29	<b>0.00</b>	—	—	—	1,895.11	2.21	<b>0.02</b>	40.5	30.2	120.0	120.0	120.0	120.6	121.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	5
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.8118
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1560
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0102

File dispersion-qkp-geo\_2000\_005.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	100,341

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	136,711.5	0.17	0.04	<b>0.00</b>	—	—	—	1,695.01	0.16	<b>0.12</b>	51.5	31.0	120.0	120.0	120.0	120.1	120.0
5.0	276,555.0	0.06	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.17	<b>0.03</b>	77.6	26.7	120.0	120.0	120.0	112.5	120.0
10.0	549,751.0	0.06	0.04	<b>0.00</b>	—	—	—	42.20	0.25	<b>0.04</b>	112.3	34.8	120.0	120.0	120.0	120.1	120.0
25.0	1,352,402.6	0.04	0.01	<b>0.00</b>	—	—	—	4.64	0.21	<b>0.09</b>	120.1	41.2	120.0	120.0	120.0	120.1	120.0
50.0	2,711,393.4	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	2.05	0.29	<b>0.08</b>	120.1	45.7	120.0	120.0	120.0	120.1	120.0
75.0	4,059,940.2	0.01	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.37	<b>0.08</b>	120.1	36.6	120.0	120.0	120.0	54.4	120.0
Avg		0.06	0.02	<b>0.00</b>	—	—	—	290.65	0.24	<b>0.07</b>	100.3	36.0	120.0	120.0	120.0	107.9	120.0
Min		0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.16	<b>0.03</b>	51.5	26.7	120.0	120.0	120.0	54.4	120.0
Max		0.17	0.04	<b>0.00</b>	—	—	—	1,695.01	0.37	<b>0.12</b>	120.1	45.7	120.0	120.0	120.0	120.1	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	8
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.1898
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1870
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0124

File dispersion-qkp-geo\_2000\_010.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	200,031

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	267,467.9	0.01	0.01	<b>0.00</b>	—	—	—	2,422.94	0.36	<b>0.12</b>	53.9	36.8	120.0	120.0	120.0	120.5	120.0
5.0	541,424.4	0.14	0.02	<b>0.00</b>	—	—	—	1,540.13	0.52	<b>0.03</b>	79.1	26.1	120.0	120.0	120.0	120.7	120.0
10.0	1,095,925.4	0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	853.00	0.38	<b>0.03</b>	117.0	35.3	120.0	120.0	120.0	120.7	120.0
25.0	2,712,968.6	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	301.76	0.62	<b>0.11</b>	120.0	65.5	120.0	120.0	120.0	120.6	120.0
50.0	5,406,616.3	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	96.54	0.67	<b>0.10</b>	120.0	38.6	120.0	120.0	120.0	120.6	120.0
75.0	8,048,158.9	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	34.44	0.45	<b>0.08</b>	120.0	36.0	120.0	120.0	120.0	121.4	120.0
Avg		0.03	0.01	<b>0.00</b>	—	—	—	874.80	0.50	<b>0.08</b>	101.7	39.7	120.0	120.0	120.0	120.8	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	34.44	0.36	<b>0.03</b>	53.9	26.1	120.0	120.0	120.0	120.5	120.0
Max		0.14	0.02	<b>0.00</b>	—	—	—	2,422.94	0.67	<b>0.12</b>	120.0	65.5	120.0	120.0	120.0	121.4	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	8
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.3278
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.2040
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0127

File dispersion-qkp-geo\_2000\_025.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	500,156

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	632,321.8	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	3,408.47	1.13	<b>0.13</b>	53.6	37.8	120.0	120.0	120.0	120.6	121.0
5.0	1,291,370.9	0.10	<b>0.00</b>	<b>0.00</b>	—	—	—	1,993.28	1.44	<b>0.03</b>	80.3	27.8	120.0	120.0	120.0	120.8	121.0
10.0	2,610,122.7	0.06	0.01	<b>0.00</b>	—	—	—	905.23	1.79	<b>0.06</b>	118.4	63.2	120.0	120.0	120.0	124.2	120.0
25.0	6,576,660.0	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	312.80	1.56	<b>0.10</b>	120.0	73.6	120.0	120.0	120.0	122.2	120.0
50.0	13,266,745.0	0.07	<b>0.00</b>	<b>0.00</b>	—	—	—	100.88	1.73	<b>0.12</b>	120.1	40.6	120.0	120.0	120.0	120.5	120.0
75.0	19,925,443.5	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	32.77	0.78	<b>0.09</b>	120.1	37.8	120.0	120.0	120.0	120.7	121.0
Avg		0.04	0.00	<b>0.00</b>	—	—	—	1,125.57	1.41	<b>0.09</b>	102.1	46.8	120.0	120.0	120.0	121.5	120.5
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	32.77	0.78	<b>0.03</b>	53.6	27.8	120.0	120.0	120.0	120.5	120.0
Max		0.10	0.01	<b>0.00</b>	—	—	—	3,408.47	1.79	<b>0.13</b>	120.1	73.6	120.0	120.0	120.0	124.2	121.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	5
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.8193
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.2500
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0211

File dispersion-qkp-geo\_2000\_050.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	1,000,241

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	1,277,868.8	0.19	<b>0.00</b>	<b>0.00</b>	—	—	—	4,177.33	2.95	<b>0.12</b>	54.3	35.7	120.0	120.0	120.0	120.7	122.0
5.0	2,599,290.7	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	1,889.56	3.34	<b>0.03</b>	78.1	34.5	120.0	120.0	120.0	120.8	122.0
10.0	5,293,514.1	0.15	<b>0.00</b>	<b>0.00</b>	—	—	—	860.51	3.23	<b>0.05</b>	113.9	71.7	120.0	120.0	120.0	121.6	122.0
25.0	13,331,956.6	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	290.99	3.22	<b>0.09</b>	120.0	72.0	120.0	120.0	120.0	120.8	122.0
50.0	26,734,830.5	0.07	0.01	<b>0.00</b>	—	—	—	99.07	3.20	<b>0.10</b>	120.1	41.9	120.0	120.0	120.0	120.7	122.0
75.0	39,885,416.8	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	30.89	1.31	<b>0.09</b>	120.1	39.9	120.0	120.0	120.0	121.1	122.0
Avg		0.07	0.00	<b>0.00</b>	—	—	—	1,224.72	2.88	<b>0.08</b>	101.1	49.3	120.0	120.0	120.0	120.9	122.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	30.89	1.31	<b>0.03</b>	54.3	34.5	120.0	120.0	120.0	120.7	122.0
Max		0.19	0.01	<b>0.00</b>	—	—	—	4,177.33	3.34	<b>0.12</b>	120.1	72.0	120.0	120.0	120.0	121.6	122.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	6
Running time in seconds for writing input file ( $t^{\text{write}}$ )	1.6481
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.3440
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0125

File dispersion-qkp-geo\_2000\_075.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	1,500,364

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	1,906,596.5	0.20	<b>0.00</b>	<b>0.00</b>	—	—	—	2,981.14	3.71	<b>0.12</b>	54.7	40.7	120.0	120.0	120.0	121.2	120.0
5.0	3,891,374.3	0.04	<b>0.00</b>	<b>0.00</b>	—	—	—	1,493.72	5.37	<b>0.03</b>	80.2	47.5	120.0	120.0	120.0	121.3	120.0
10.0	7,883,017.1	0.03	0.03	<b>0.00</b>	—	—	—	809.74	4.75	<b>0.05</b>	117.7	40.9	120.0	120.0	120.0	122.5	120.0
25.0	19,786,242.0	0.04	<b>0.00</b>	<b>0.00</b>	—	—	—	284.41	4.59	<b>0.09</b>	120.0	69.0	120.0	120.0	120.0	121.1	120.0
50.0	40,023,674.1	0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	103.18	3.65	<b>0.10</b>	120.1	41.7	120.0	120.0	120.0	121.3	120.0
75.0	60,035,191.5	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	36.14	1.71	<b>0.08</b>	120.1	39.4	120.0	120.0	120.0	121.1	120.0
Avg		0.06	0.01	<b>0.00</b>	—	—	—	951.39	3.96	<b>0.08</b>	102.1	46.5	120.0	120.0	120.0	121.4	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	36.14	1.71	<b>0.03</b>	54.7	39.4	120.0	120.0	120.0	121.1	120.0
Max		0.20	0.03	<b>0.00</b>	—	—	—	2,981.14	5.37	<b>0.12</b>	120.1	69.0	120.0	120.0	120.0	122.5	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	4
Running time in seconds for writing input file ( $t^{\text{write}}$ )	2.7820
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.4220
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0127



File dispersion-qkp-geo\_2000\_100.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	1,999,000

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	2,581,292.0	0.45	0.03	<b>0.00</b>	—	—	—	3,074.16	6.26	<b>0.12</b>	55.3	44.4	120.0	120.0	120.0	122.1	120.0
5.0	5,203,892.0	0.23	0.04	<b>0.00</b>	—	—	—	1,958.47	6.71	<b>0.03</b>	80.1	35.0	120.0	120.0	120.0	122.7	120.0
10.0	10,471,588.1	0.04	<b>0.00</b>	<b>0.00</b>	—	—	—	919.87	5.54	<b>0.05</b>	115.8	75.5	120.0	120.0	120.0	121.4	120.0
25.0	26,453,990.6	0.13	<b>0.00</b>	<b>0.00</b>	—	—	—	313.89	5.33	<b>0.09</b>	120.1	44.0	120.0	120.0	120.0	122.1	120.0
50.0	53,203,842.6	0.03	0.01	<b>0.00</b>	—	—	—	102.98	4.52	<b>0.10</b>	120.1	42.4	120.0	120.0	120.0	121.3	120.0
75.0	79,959,688.7	0.02	0.02	<b>0.00</b>	—	—	—	34.91	2.17	<b>0.09</b>	120.1	39.1	120.0	120.0	120.0	121.2	120.0
Avg		0.15	0.02	<b>0.00</b>	—	—	—	1,067.38	5.09	<b>0.08</b>	101.9	46.7	120.0	120.0	120.0	121.8	120.0
Min		0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	34.91	2.17	<b>0.03</b>	55.3	35.0	120.0	120.0	120.0	121.2	120.0
Max		0.45	0.04	<b>0.00</b>	—	—	—	3,074.16	6.71	<b>0.12</b>	120.1	75.5	120.0	120.0	120.0	122.7	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	5
Running time in seconds for writing input file ( $t^{\text{write}}$ )	3.3230
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.5460
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0126

File dispersion-qkp-wgeo\_0300\_005.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	2,311

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	243,827.0	<b>0.00</b>	0.89	<b>0.00</b>	—	1,280.02	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.9	120.0	1.9	120.0	0.2	4.0
5.0	456,069.3	0.79	1.12	0.35	—	279.70	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.4	3.3	120.0	5.6	120.0	0.4	4.0
10.0	871,396.1	0.12	0.79	<b>0.00</b>	—	557.82	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.6	4.9	120.0	7.2	120.0	0.8	24.0
25.0	1,982,381.4	0.77	0.27	0.04	—	221.95	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.0	4.5	120.0	10.2	120.0	1.4	22.0
50.0	3,784,007.6	<b>0.00</b>	0.12	<b>0.00</b>	—	105.14	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.5	3.8	120.0	10.2	120.0	0.7	5.0
75.0	5,342,038.6	0.03	0.07	<b>0.00</b>	—	42.71	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.8	2.3	120.0	10.8	120.0	0.5	23.0
Avg		0.29	0.54	0.06	—	414.56	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.9	3.6	120.0	7.7	120.0	0.7	13.7
Min		<b>0.00</b>	0.07	<b>0.00</b>	—	42.71	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.3	120.0	1.9	120.0	0.2	4.0
Max		0.79	1.12	0.35	—	1,280.02	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.8	4.9	120.0	10.8	120.0	1.4	24.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	17
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0045
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0150
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0078

File dispersion-qkp-wgeo\_0300\_010.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	4,491

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	458,676.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	950.79	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.6	120.0	2.2	120.0	0.2	6.0
5.0	844,525.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	4,307.59	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.1	120.0	3.0	120.0	0.8	40.0
10.0	1,556,993.5	0.49	0.44	<b>0.00</b>	—	970.38	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.7	5.4	120.0	5.5	120.0	3.8	63.0
25.0	3,619,800.7	0.36	0.03	<b>0.00</b>	—	256.64	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	4.5	120.0	9.0	120.0	3.4	109.0
50.0	7,002,766.4	0.18	0.10	<b>0.00</b>	—	104.84	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.5	3.9	120.0	9.3	120.0	0.8	48.0
75.0	10,160,390.8	0.01	0.01	<b>0.00</b>	—	34.89	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.8	2.2	120.0	10.5	120.0	0.9	120.0
Avg		0.17	0.10	<b>0.00</b>	—	1,104.19	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	3.6	120.0	6.6	120.0	1.6	64.3
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	34.89	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.2	120.0	2.2	120.0	0.2	6.0
Max		0.49	0.44	<b>0.00</b>	—	4,307.59	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.8	5.4	120.0	10.5	120.0	3.8	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	25
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0139
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0160
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0079

File dispersion-qkp-wgeo\_0300\_025.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	11,240

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	931,558.9	0.50	0.08	0.06	—	3,164.45	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.8	120.0	2.3	120.0	9.2	34.0
5.0	1,853,334.4	0.08	<b>0.00</b>	<b>0.00</b>	—	1,281.29	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.8	120.0	4.2	120.0	9.3	64.0
10.0	3,664,060.9	0.52	0.26	<b>0.00</b>	—	538.98	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.7	7.7	120.0	6.8	120.0	8.6	60.0
25.0	9,131,039.3	0.17	0.03	<b>0.00</b>	—	314.37	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	7.2	120.0	7.3	120.0	18.3	120.0
50.0	17,810,122.9	0.19	0.05	<b>0.00</b>	—	125.46	—	<b>0.00</b>	0.03	<b>0.00</b>	1.6	3.3	120.0	9.1	120.0	7.2	120.0
75.0	25,817,371.7	0.01	<b>0.00</b>	<b>0.00</b>	—	43.56	—	<b>0.00</b>	0.06	<b>0.00</b>	1.9	2.1	120.0	9.9	120.0	2.3	120.0
Avg		0.24	0.07	0.01	—	911.35	—	<b>0.00</b>	0.01	<b>0.00</b>	1.0	4.5	120.0	6.6	120.0	9.1	86.3
Min		0.01	<b>0.00</b>	<b>0.00</b>	—	43.56	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.1	120.0	2.3	120.0	2.3	34.0
Max		0.52	0.26	0.06	—	3,164.45	—	<b>0.00</b>	0.06	<b>0.00</b>	1.9	7.7	120.0	9.9	120.0	18.3	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	15
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0185
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0150
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0081

File dispersion-qkp-wgeo\_0300\_050.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	22,294

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	1,785,890.6	0.30	0.11	<b>0.00</b>	—	2,094.36	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.8	120.0	2.5	120.0	52.7	120.0
5.0	3,600,198.8	0.70	<b>0.00</b>	<b>0.00</b>	—	1,058.67	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.0	120.0	4.7	120.0	31.8	120.0
10.0	6,955,208.0	1.06	<b>0.00</b>	<b>0.00</b>	—	457.34	—	<b>0.00</b>	0.07	<b>0.00</b>	0.7	8.8	120.0	7.0	120.0	106.6	120.0
25.0	17,494,277.6	0.11	0.04	<b>0.00</b>	—	307.49	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.1	5.0	120.0	7.0	120.0	64.9	120.0
50.0	35,223,495.4	0.45	0.03	<b>0.00</b>	—	124.65	—	<b>0.00</b>	0.03	<b>0.00</b>	1.5	3.7	120.0	8.1	120.0	17.3	120.0
75.0	51,060,804.8	0.01	0.01	<b>0.00</b>	—	36.13	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.8	2.0	120.0	9.8	120.0	14.8	120.0
Avg		0.44	0.03	<b>0.00</b>	—	679.77	—	<b>0.00</b>	0.02	<b>0.00</b>	1.0	4.2	120.0	6.5	120.0	48.0	120.0
Min		0.01	<b>0.00</b>	<b>0.00</b>	—	36.13	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.3	2.0	120.0	2.5	120.0	14.8	120.0
Max		1.06	0.11	<b>0.00</b>	—	2,094.36	—	<b>0.00</b>	0.07	<b>0.01</b>	1.8	8.8	120.0	9.8	120.0	106.6	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	13
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0340
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0160
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0083

File dispersion-qkp-wgeo\_0300\_075.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	33,661

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	2,999,792.3	0.36	<b>0.00</b>	<b>0.00</b>	—	932.40	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.4	2.9	120.0	3.4	120.0	21.3	120.0
5.0	5,522,693.0	0.72	0.36	<b>0.00</b>	—	793.97	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.4	120.0	4.6	120.0	35.9	120.0
10.0	10,622,771.9	0.05	0.04	<b>0.00</b>	—	415.50	—	<b>0.00</b>	0.02	<b>0.00</b>	0.7	3.8	120.0	7.1	120.0	103.5	120.0
25.0	26,124,846.2	0.14	<b>0.00</b>	<b>0.00</b>	—	296.61	—	<b>0.00</b>	0.02	<b>0.01</b>	1.1	8.2	120.0	7.0	120.0	114.4	120.0
50.0	52,283,443.2	0.22	0.02	<b>0.00</b>	—	107.68	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.6	3.5	120.0	7.9	120.0	105.3	120.0
75.0	75,852,661.7	0.44	0.22	<b>0.00</b>	—	42.40	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.9	2.2	120.0	9.7	120.0	27.0	120.0
Avg		0.32	0.11	<b>0.00</b>	—	431.43	—	<b>0.00</b>	0.01	<b>0.00</b>	1.0	4.0	120.0	6.6	120.0	67.9	120.0
Min		0.05	<b>0.00</b>	<b>0.00</b>	—	42.40	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.4	2.2	120.0	3.4	120.0	21.3	120.0
Max		0.72	0.36	<b>0.00</b>	—	932.40	—	<b>0.00</b>	0.02	<b>0.01</b>	1.9	8.2	120.0	9.7	120.0	114.4	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	13
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0537
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0160
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0086

File dispersion-qkp-wgeo\_0300\_100.txt

Property of graph	Value
Nodes ( $n$ )	300
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	44,850

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	3,954,022.0	0.19	<b>0.00</b>	<b>0.00</b>	—	1,177.91	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.4	3.1	120.0	3.1	120.0	11.6	120.0
5.0	7,543,680.9	1.16	0.46	<b>0.00</b>	—	1,020.28	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.5	3.2	120.0	3.8	120.0	33.8	120.0
10.0	14,538,477.6	0.83	0.02	<b>0.00</b>	—	593.49	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.7	7.7	120.0	5.6	120.0	43.5	120.0
25.0	35,493,957.2	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	265.48	—	<b>0.00</b>	0.03	<b>0.01</b>	1.1	6.7	120.0	6.4	120.0	42.1	120.0
50.0	68,925,411.6	0.28	0.01	<b>0.00</b>	—	97.33	—	<b>0.00</b>	0.04	<b>0.01</b>	1.5	3.8	120.0	8.0	120.0	89.2	120.0
75.0	102,263,704.4	0.29	0.06	<b>0.00</b>	—	38.87	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.9	2.2	120.0	9.5	120.0	40.5	120.0
Avg		0.46	0.09	<b>0.00</b>	—	532.23	—	<b>0.00</b>	0.01	<b>0.00</b>	1.0	4.4	120.0	6.1	120.0	43.5	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	38.87	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.4	2.2	120.0	3.1	120.0	11.6	120.0
Max		1.16	0.46	<b>0.00</b>	—	1,177.91	—	<b>0.00</b>	0.04	<b>0.01</b>	1.9	7.7	120.0	9.5	120.0	89.2	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	13
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0670
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0084

File dispersion-qkp-wgeo\_0500\_005.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	6,367

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	558,061.0	1.76	1.48	0.18	—	562.77	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	0.9	5.2	120.0	24.6	120.0	3.6	32.0
5.0	1,128,973.8	0.35	0.08	<b>0.00</b>	—	446.02	—	<b>0.00</b>	0.08	<b>0.00</b>	1.5	3.6	120.0	34.7	120.0	2.2	120.0
10.0	2,230,939.1	0.39	0.22	0.02	—	352.33	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	2.1	6.3	120.0	53.7	120.0	4.1	120.0
25.0	5,452,739.2	0.15	0.12	<b>0.00</b>	—	273.07	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	3.5	7.5	120.0	63.4	120.0	1.6	36.0
50.0	10,669,402.8	0.06	0.03	<b>0.00</b>	—	106.92	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	5.1	6.4	120.0	52.7	120.0	1.1	52.0
75.0	15,422,748.8	0.03	0.03	<b>0.00</b>	—	37.35	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	6.2	3.6	120.0	65.2	120.0	1.2	34.0
Avg		0.46	0.33	0.03	—	296.41	—	<b>0.00</b>	0.01	<b>0.01</b>	3.2	5.4	120.0	49.0	120.0	2.3	65.7
Min		0.03	0.03	<b>0.00</b>	—	37.35	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.9	3.6	120.0	24.6	120.0	1.1	32.0
Max		1.76	1.48	0.18	—	562.77	—	<b>0.00</b>	0.08	<b>0.01</b>	6.2	7.5	120.0	65.2	120.0	4.1	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	17
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0117
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0088



File dispersion-qkp-wgeo\_0500\_010.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	12,399

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	1,084,012.7	0.23	0.38	<b>0.00</b>	—	1,266.45	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	5.5	120.0	12.4	120.0	14.4	69.0
5.0	2,087,950.0	<b>0.00</b>	0.09	<b>0.00</b>	—	2,615.23	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.5	2.6	120.0	18.3	120.0	17.9	83.0
10.0	4,020,257.3	0.39	0.22	<b>0.00</b>	—	1,245.56	—	<b>0.00</b>	0.14	<b>0.01</b>	2.2	6.7	120.0	36.2	120.0	36.9	120.0
25.0	10,123,775.8	<b>0.00</b>	0.12	<b>0.00</b>	—	395.58	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	3.5	7.5	120.0	47.5	120.0	29.2	120.0
50.0	20,091,488.2	0.04	0.04	<b>0.00</b>	—	114.36	—	<b>0.00</b>	0.04	<b>0.01</b>	5.1	5.2	120.0	46.6	120.0	6.1	120.0
75.0	29,194,379.6	0.13	0.04	<b>0.00</b>	—	37.60	—	<b>0.00</b>	0.01	<b>0.00</b>	6.2	3.4	120.0	62.1	120.0	5.9	120.0
Avg		0.13	0.15	<b>0.00</b>	—	945.80	—	<b>0.00</b>	0.03	<b>0.01</b>	3.2	5.2	120.0	37.2	120.0	18.4	105.3
Min		<b>0.00</b>	0.04	<b>0.00</b>	—	37.60	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.0	2.6	120.0	12.4	120.0	5.9	69.0
Max		0.39	0.38	<b>0.00</b>	—	2,615.23	—	<b>0.00</b>	0.14	<b>0.01</b>	6.2	7.5	120.0	62.1	120.0	36.9	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	20
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0196
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0088

File dispersion-qkp-wgeo\_0500\_025.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	31,118

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	2,581,885.1	0.30	0.24	<b>0.00</b>	—	1,132.07	—	<b>0.00</b>	0.50	<b>0.01</b>	1.1	8.8	120.0	17.5	120.0	17.4	120.0
5.0	5,160,148.6	0.41	0.28	<b>0.00</b>	—	1,465.44	—	<b>0.00</b>	0.10	<b>0.00</b>	1.6	4.5	120.0	24.9	120.0	18.8	120.0
10.0	10,016,504.2	0.58	0.12	<b>0.00</b>	—	541.69	—	<b>0.00</b>	0.06	<b>0.01</b>	2.3	9.7	120.0	38.3	120.0	82.6	120.0
25.0	24,853,019.8	0.08	0.03	0.01	—	304.35	—	<b>0.00</b>	0.01	<b>0.01</b>	3.6	9.1	120.0	43.1	120.0	36.4	120.0
50.0	48,993,908.6	0.14	<b>0.00</b>	<b>0.00</b>	—	114.88	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	5.2	7.0	120.0	44.2	120.0	44.0	120.0
75.0	72,048,838.2	0.24	<b>0.00</b>	<b>0.00</b>	—	35.80	—	<b>0.00</b>	0.09	<b>0.01</b>	6.2	4.2	120.0	60.9	120.0	19.6	120.0
Avg		0.29	0.11	0.00	—	599.04	—	<b>0.00</b>	0.13	<b>0.01</b>	3.3	7.2	120.0	38.1	120.0	36.4	120.0
Min		0.08	<b>0.00</b>	<b>0.00</b>	—	35.80	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	4.2	120.0	17.5	120.0	17.4	120.0
Max		0.58	0.28	0.01	—	1,465.44	—	<b>0.00</b>	0.50	<b>0.01</b>	6.2	9.7	120.0	60.9	120.0	82.6	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	10
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0542
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0088

File dispersion-qkp-wgeo\_0500\_050.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	62,463

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	4,702,038.2	0.52	0.40	<b>0.00</b>	—	771.85	—	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.1	2.4	120.0	21.7	120.0	120.3	120.0
5.0	9,564,042.5	0.58	0.07	<b>0.00</b>	—	854.58	—	<b>0.00</b>	0.21	<b>0.00</b>	1.7	5.5	120.0	30.6	120.0	103.2	120.0
10.0	18,747,885.1	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	691.66	—	1.98	0.08	<b>0.01</b>	2.3	10.3	120.0	34.6	120.0	121.6	120.0
25.0	47,909,716.0	0.11	0.04	<b>0.00</b>	—	270.36	—	5.93	<b>0.00</b>	<b>0.01</b>	3.7	8.0	120.0	36.7	120.0	120.1	120.0
50.0	96,893,829.3	0.06	<b>0.00</b>	<b>0.00</b>	—	96.98	—	0.09	0.03	<b>0.01</b>	5.3	7.0	120.0	40.0	120.0	120.3	120.0
75.0	143,539,160.9	0.17	0.02	<b>0.00</b>	—	33.41	—	<b>0.00</b>	0.11	<b>0.00</b>	6.3	3.1	120.0	59.9	120.0	69.9	120.0
Avg		0.24	0.09	<b>0.00</b>	—	453.14	—	1.33	0.07	<b>0.01</b>	3.4	6.0	120.0	37.2	120.0	109.2	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	33.41	—	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.1	2.4	120.0	21.7	120.0	69.9	120.0
Max		0.58	0.40	<b>0.00</b>	—	854.58	—	5.93	0.21	<b>0.01</b>	6.3	10.3	120.0	59.9	120.0	121.6	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	8
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0978
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0320
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0092

File dispersion-qkp-wgeo\_0500\_075.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	93,428

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	7,076,592.5	0.58	0.04	<b>0.00</b>	—	1,271.20	—	2,418.75	0.04	<b>0.01</b>	1.1	2.3	120.0	22.0	120.0	120.1	120.0
5.0	14,164,835.9	0.15	0.10	<b>0.00</b>	—	832.00	—	1,613.52	0.05	<b>0.00</b>	1.7	3.3	120.0	30.2	120.0	120.1	120.0
10.0	28,229,742.7	0.11	<b>0.00</b>	<b>0.00</b>	—	689.86	—	7.32	0.17	<b>0.01</b>	2.4	7.7	120.0	36.2	120.0	120.1	120.0
25.0	71,497,396.7	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	307.80	—	5.39	0.10	<b>0.01</b>	3.8	8.8	120.0	39.2	120.0	120.1	120.0
50.0	145,346,118.0	0.32	<b>0.00</b>	<b>0.00</b>	—	113.11	—	23.63	0.02	<b>0.01</b>	5.4	6.9	120.0	41.6	120.0	120.1	120.0
75.0	215,222,498.9	0.17	<b>0.00</b>	<b>0.00</b>	—	33.63	—	0.23	0.15	<b>0.01</b>	6.5	3.6	120.0	60.0	120.0	120.1	120.0
Avg		0.22	0.02	<b>0.00</b>	—	541.27	—	678.14	0.09	<b>0.01</b>	3.5	5.5	120.0	38.2	120.0	120.1	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	33.63	—	0.23	0.02	<b>0.00</b>	1.1	2.3	120.0	22.0	120.0	120.1	120.0
Max		0.58	0.10	<b>0.00</b>	—	1,271.20	—	2,418.75	0.17	<b>0.01</b>	6.5	8.8	120.0	60.0	120.0	120.1	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	7
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.1621
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0310
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0088

File dispersion-qkp-wgeo\_0500\_100.txt

Property of graph	Value
Nodes ( $n$ )	500
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	124,750

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	9,398,593.9	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	1,755.88	—	3,166.00	<b>0.00</b>	<b>0.01</b>	1.1	4.2	120.0	17.8	120.0	120.1	120.0
5.0	18,962,077.3	0.08	<b>0.00</b>	<b>0.00</b>	—	1,281.51	—	1,280.97	0.18	<b>0.00</b>	1.5	4.6	120.0	26.9	120.0	120.1	120.0
10.0	38,362,114.8	0.30	0.07	<b>0.00</b>	—	654.83	—	4.85	0.04	<b>0.01</b>	2.2	10.9	120.0	35.2	120.0	120.1	120.0
25.0	96,012,175.0	0.01	<b>0.00</b>	<b>0.00</b>	—	290.82	—	44.42	0.02	<b>0.01</b>	3.6	10.2	120.0	36.3	120.0	120.1	120.0
50.0	190,520,840.2	0.25	0.02	<b>0.00</b>	—	117.96	—	38.14	0.14	<b>0.01</b>	5.1	6.3	120.0	44.0	120.0	120.1	120.0
75.0	281,686,636.9	0.16	0.01	<b>0.00</b>	—	34.52	—	18.25	0.06	<b>0.00</b>	6.1	4.2	120.0	59.7	120.0	120.1	120.0
Avg		0.13	0.02	<b>0.00</b>	—	689.25	—	758.77	0.07	<b>0.01</b>	3.3	6.7	120.0	36.6	120.0	120.1	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	34.52	—	4.85	<b>0.00</b>	<b>0.00</b>	1.1	4.2	120.0	17.8	120.0	120.1	120.0
Max		0.30	0.07	<b>0.00</b>	—	1,755.88	—	3,166.00	0.18	<b>0.01</b>	6.1	10.9	120.0	59.7	120.0	120.1	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.2003
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0320
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0091

File dispersion-qkp-wgeo\_1000\_005.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	24,926

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	2,097,668.7	0.27	0.19	<b>0.00</b>	—	—	—	<b>0.00</b>	0.63	<b>0.01</b>	7.3	10.4	120.0	120.0	120.0	58.6	120.0
5.0	4,133,456.0	0.20	0.05	<b>0.00</b>	—	—	—	<b>0.00</b>	0.12	<b>0.01</b>	10.5	9.6	120.0	120.0	120.0	43.2	120.0
10.0	8,257,446.2	0.15	0.06	0.04	—	—	—	<b>0.00</b>	0.11	<b>0.01</b>	15.5	12.3	120.0	120.0	120.0	26.8	120.0
25.0	20,680,812.1	0.07	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.03	<b>0.02</b>	24.5	17.7	120.0	120.0	120.0	44.8	120.0
50.0	40,901,461.2	0.05	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.08	<b>0.02</b>	33.9	10.4	120.0	120.0	120.0	8.9	120.0
75.0	59,591,361.6	0.02	0.01	<b>0.00</b>	—	—	—	0.01	0.06	<b>0.01</b>	40.5	9.1	120.0	120.0	120.0	4.5	120.0
Avg		0.13	0.06	0.01	—	—	—	<b>0.00</b>	0.17	<b>0.01</b>	22.0	11.6	120.0	120.0	120.0	31.1	120.0
Min		0.02	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.03	<b>0.01</b>	7.3	9.1	120.0	120.0	120.0	4.5	120.0
Max		0.27	0.19	0.04	—	—	—	<b>0.01</b>	0.63	<b>0.02</b>	40.5	17.7	120.0	120.0	120.0	58.6	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	12
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0446
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0940
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0105

File dispersion-qkp-wgeo\_1000\_010.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	49,500

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	4,094,690.2	0.17	0.15	<b>0.00</b>	—	—	—	<b>0.00</b>	0.28	<b>0.02</b>	7.5	9.3	120.0	120.0	120.0	69.3	120.0
5.0	8,106,253.8	0.08	0.02	<b>0.00</b>	—	—	—	<b>0.00</b>	0.10	<b>0.01</b>	11.0	10.3	120.0	120.0	120.0	70.7	120.0
10.0	16,208,280.2	<b>0.00</b>	0.03	<b>0.00</b>	—	—	—	<b>0.00</b>	0.03	<b>0.01</b>	16.7	11.4	120.0	120.0	120.0	59.8	120.0
25.0	39,835,229.4	0.02	0.01	<b>0.00</b>	—	—	—	0.01	0.13	<b>0.02</b>	26.0	16.7	120.0	120.0	120.0	32.1	120.0
50.0	77,901,185.6	0.02	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.02	<b>0.02</b>	33.5	12.2	120.0	120.0	120.0	119.8	120.0
75.0	114,537,403.9	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.07	<b>0.01</b>	40.7	8.9	120.0	120.0	120.0	17.0	120.0
Avg		0.05	0.04	<b>0.00</b>	—	—	—	0.00	0.11	<b>0.02</b>	22.6	11.5	120.0	120.0	120.0	61.5	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.02	<b>0.01</b>	7.5	8.9	120.0	120.0	120.0	17.0	120.0
Max		0.17	0.15	<b>0.00</b>	—	—	—	0.01	0.28	<b>0.02</b>	40.7	16.7	120.0	120.0	120.0	119.8	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	11
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.0899
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1090
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0068

File dispersion-qkp-wgeo\_1000\_025.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	124,346

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	9,993,687.5	0.01	0.01	<b>0.00</b>	—	—	—	2,785.20	<b>0.00</b>	<b>0.02</b>	7.6	6.6	120.0	120.0	120.0	120.1	120.0
5.0	19,788,228.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	1,650.03	0.33	<b>0.01</b>	10.8	7.2	120.0	120.0	120.0	120.1	120.0
10.0	39,510,732.5	0.30	0.02	<b>0.00</b>	—	—	—	6.82	0.07	<b>0.01</b>	15.4	9.7	120.0	120.0	120.0	120.1	120.0
25.0	98,588,970.4	0.09	<b>0.00</b>	<b>0.00</b>	—	—	—	43.92	0.16	<b>0.02</b>	24.3	15.1	120.0	120.0	120.0	120.1	120.0
50.0	198,616,197.0	0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	42.87	0.09	<b>0.02</b>	33.5	10.6	120.0	120.0	120.0	120.1	120.0
75.0	292,888,882.6	0.03	0.01	<b>0.00</b>	—	—	—	0.01	0.15	<b>0.01</b>	40.4	9.2	120.0	120.0	120.0	36.3	120.0
Avg		0.08	0.01	<b>0.00</b>	—	—	—	754.81	0.13	<b>0.02</b>	22.0	9.7	120.0	120.0	120.0	106.1	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	0.01	<b>0.00</b>	<b>0.01</b>	7.6	6.6	120.0	120.0	120.0	36.3	120.0
Max		0.30	0.02	<b>0.00</b>	—	—	—	2,785.20	0.33	<b>0.02</b>	40.4	15.1	120.0	120.0	120.0	120.1	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	6
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.2122
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.0940
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0118



File dispersion-qkp-wgeo\_1000\_050.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	250,545

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	17,884,079.9	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	2,932.39	0.35	<b>0.02</b>	8.2	11.5	120.0	120.0	120.0	120.3	120.0
5.0	37,062,363.1	0.47	<b>0.00</b>	<b>0.00</b>	—	—	—	1,945.77	0.26	<b>0.01</b>	12.1	7.5	120.0	120.0	120.0	120.3	120.0
10.0	74,779,460.4	0.02	<b>0.00</b>	0.02	—	—	—	856.41	0.31	<b>0.01</b>	16.9	14.1	120.0	120.0	120.0	120.4	120.0
25.0	192,960,369.6	0.13	<b>0.00</b>	<b>0.00</b>	—	—	—	311.42	0.37	<b>0.02</b>	26.8	19.4	120.0	120.0	120.0	120.3	120.0
50.0	387,068,176.0	0.11	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.37	<b>0.02</b>	35.5	12.3	120.0	120.0	120.0	64.2	120.0
75.0	574,270,255.2	0.07	0.02	<b>0.00</b>	—	—	—	0.03	0.13	<b>0.01</b>	42.2	9.2	120.0	120.0	120.0	120.3	120.0
Avg		0.13	<b>0.00</b>	<b>0.00</b>	—	—	—	1,007.67	0.30	<b>0.02</b>	23.6	12.3	120.0	120.0	120.0	111.0	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.13	<b>0.01</b>	8.2	7.5	120.0	120.0	120.0	64.2	120.0
Max		0.47	<b>0.02</b>	<b>0.02</b>	—	—	—	2,932.39	0.37	<b>0.02</b>	42.2	19.4	120.0	120.0	120.0	120.4	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	11
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.4223
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1090
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0104

File dispersion-qkp-wgeo\_1000\_075.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	374,402

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	27,696,300.9	0.14	0.14	<b>0.00</b>	—	—	—	2,476.34	0.98	<b>0.02</b>	7.9	11.5	120.0	120.0	120.0	120.4	120.0
5.0	56,356,737.3	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	1,443.26	0.46	<b>0.01</b>	11.2	13.6	120.0	120.0	120.0	120.5	120.0
10.0	113,225,968.9	0.19	0.01	<b>0.00</b>	—	—	—	810.77	0.60	<b>0.01</b>	15.8	19.8	120.0	120.0	120.0	120.4	120.0
25.0	288,933,766.1	0.20	0.01	<b>0.00</b>	—	—	—	296.37	0.54	<b>0.02</b>	25.1	20.0	120.0	120.0	120.0	120.4	120.0
50.0	590,302,430.7	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	113.75	0.53	<b>0.02</b>	33.9	12.9	120.0	120.0	120.0	120.4	120.0
75.0	880,675,581.5	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	40.47	0.20	<b>0.01</b>	40.8	10.0	120.0	120.0	120.0	120.3	120.0
Avg		0.09	0.03	<b>0.00</b>	—	—	—	863.49	0.55	<b>0.02</b>	22.5	14.7	120.0	120.0	120.0	120.4	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	40.47	0.20	<b>0.01</b>	7.9	10.0	120.0	120.0	120.0	120.3	120.0
Max		0.20	0.14	<b>0.00</b>	—	—	—	2,476.34	0.98	<b>0.02</b>	40.8	20.0	120.0	120.0	120.0	120.5	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	11
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.6941
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1400
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0104

File dispersion-qkp-wgeo\_1000\_100.txt

Property of graph	Value
Nodes ( $n$ )	1,000
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	499,500

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	36,867,381.1	0.24	<b>0.00</b>	<b>0.00</b>	—	—	—	2,668.33	0.90	<b>0.02</b>	7.7	10.6	120.0	120.0	120.0	120.4	121.0
5.0	75,099,219.7	0.32	0.01	<b>0.00</b>	—	—	—	1,702.28	0.95	<b>0.01</b>	10.8	13.2	120.0	120.0	120.0	120.5	120.0
10.0	152,189,862.7	0.20	<b>0.00</b>	<b>0.00</b>	—	—	—	1,065.76	0.49	<b>0.01</b>	15.4	24.7	120.0	120.0	120.0	120.5	120.0
25.0	393,478,875.7	0.01	0.01	<b>0.00</b>	—	—	—	345.23	0.97	<b>0.02</b>	24.6	13.0	120.0	120.0	120.0	120.5	120.0
50.0	786,404,410.9	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	116.19	0.59	<b>0.02</b>	33.7	11.1	120.0	120.0	120.0	120.5	121.0
75.0	1,160,864,584.9	0.13	<b>0.00</b>	<b>0.00</b>	—	—	—	43.84	0.33	<b>0.01</b>	40.8	11.7	120.0	120.0	120.0	120.5	121.0
Avg		0.15	0.00	<b>0.00</b>	—	—	—	990.27	0.70	<b>0.02</b>	22.2	14.0	120.0	120.0	120.0	120.5	120.5
Min		0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	43.84	0.33	<b>0.01</b>	7.7	10.6	120.0	120.0	120.0	120.4	120.0
Max		0.32	0.01	<b>0.00</b>	—	—	—	2,668.33	0.97	<b>0.02</b>	40.8	24.7	120.0	120.0	120.0	120.5	121.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.8241
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1250
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0107

File dispersion-qkp-wgeo\_2000\_005.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	5.0 %
Edges ( $m$ )	99,390

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	8,166,972.4	0.06	0.06	<b>0.00</b>	—	—	—	3,388.63	0.22	<b>0.03</b>	48.6	35.2	120.0	120.0	120.0	120.1	120.0
5.0	16,066,635.9	0.03	0.07	<b>0.00</b>	—	—	—	1.77	0.21	<b>0.03</b>	73.6	40.5	120.0	120.0	120.0	120.1	120.0
10.0	31,868,693.4	0.05	0.02	<b>0.00</b>	—	—	—	4.92	0.26	<b>0.05</b>	109.3	42.7	120.0	120.0	120.0	120.1	120.0
25.0	79,912,108.6	0.02	0.01	<b>0.00</b>	—	—	—	2.02	0.15	<b>0.09</b>	120.1	58.9	120.0	120.0	120.0	120.1	120.0
50.0	159,102,178.5	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.11	<b>0.08</b>	120.0	37.9	120.0	120.0	120.0	26.9	120.0
75.0	233,228,426.7	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.11	<b>0.07</b>	120.1	34.3	120.0	120.0	120.0	21.1	120.0
Avg		0.03	0.03	<b>0.00</b>	—	—	—	566.22	0.18	<b>0.06</b>	98.6	41.6	120.0	120.0	120.0	88.1	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.11	<b>0.03</b>	48.6	34.3	120.0	120.0	120.0	21.1	120.0
Max		0.06	0.07	<b>0.00</b>	—	—	—	3,388.63	0.26	<b>0.09</b>	120.1	58.9	120.0	120.0	120.0	120.1	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	12
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.1732
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.1720
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0132

File dispersion-qkp-wgeo\_2000\_010.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	10.0 %
Edges ( $m$ )	199,944

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	15,159,468.7	0.09	0.01	<b>0.00</b>	—	—	—	1,998.03	0.36	<b>0.12</b>	50.9	32.6	120.0	120.0	120.0	120.3	120.0
5.0	30,823,013.0	0.01	0.01	<b>0.00</b>	—	—	—	1,580.99	0.47	<b>0.03</b>	76.0	42.9	120.0	120.0	120.0	120.4	120.0
10.0	62,929,039.7	0.01	0.01	<b>0.00</b>	—	—	—	836.51	0.28	<b>0.05</b>	112.4	38.7	120.0	120.0	120.0	120.3	120.0
25.0	158,179,189.4	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	283.50	0.25	<b>0.09</b>	120.0	78.6	120.0	120.0	120.0	120.3	120.0
50.0	314,269,864.5	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	0.01	0.22	<b>0.07</b>	120.1	39.3	120.0	120.0	120.0	110.4	120.0
75.0	462,879,913.4	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.18	<b>0.07</b>	120.0	35.9	120.0	120.0	120.0	114.8	120.0
Avg		0.02	0.01	<b>0.00</b>	—	—	—	783.17	0.29	<b>0.07</b>	99.9	44.7	120.0	120.0	120.0	117.7	120.0
Min		0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.18	<b>0.03</b>	50.9	32.6	120.0	120.0	120.0	110.4	120.0
Max		0.09	0.01	<b>0.00</b>	—	—	—	1,998.03	0.47	<b>0.12</b>	120.1	78.6	120.0	120.0	120.0	120.4	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	7
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.3379
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.2030
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0130

File dispersion-qkp-wgeo\_2000\_025.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	25.0 %
Edges ( $m$ )	500,305

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	37,992,367.6	0.08	0.02	<b>0.00</b>	—	—	—	1.65	1.56	<b>0.12</b>	52.3	34.4	120.0	120.0	120.0	120.5	121.0
5.0	76,534,328.7	0.23	0.01	<b>0.00</b>	—	—	—	<b>0.00</b>	0.65	<b>0.03</b>	77.6	30.2	120.0	120.0	120.0	120.3	120.0
10.0	152,694,614.0	0.02	0.01	<b>0.00</b>	—	—	—	2.29	0.73	<b>0.04</b>	113.0	38.9	120.0	120.0	120.0	120.3	120.0
25.0	380,011,550.0	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	41.64	1.00	<b>0.09</b>	120.0	39.1	120.0	120.0	120.0	120.5	121.0
50.0	760,657,384.2	0.01	<b>0.00</b>	<b>0.00</b>	—	—	—	0.11	0.82	<b>0.08</b>	120.0	38.7	120.0	120.0	120.0	120.3	121.0
75.0	1,127,226,022.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	5.23	0.29	<b>0.07</b>	120.1	35.9	120.0	120.0	120.0	120.4	120.0
Avg		0.06	0.01	<b>0.00</b>	—	—	—	8.49	0.84	<b>0.07</b>	100.5	36.2	120.0	120.0	120.0	120.4	120.5
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	<b>0.00</b>	0.29	<b>0.03</b>	52.3	30.2	120.0	120.0	120.0	120.3	120.0
Max		0.23	0.02	<b>0.00</b>	—	—	—	41.64	1.56	<b>0.12</b>	120.1	39.1	120.0	120.0	120.0	120.5	121.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	8
Running time in seconds for writing input file ( $t^{\text{write}}$ )	0.8476
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.2500
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0128

File dispersion-qkp-wgeo\_2000\_050.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	50.0 %
Edges ( $m$ )	999,892

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	74,900,595.1	0.01	0.01	<b>0.00</b>	—	—	—	3,291.52	2.09	<b>0.12</b>	53.1	36.6	120.0	120.0	120.0	123.7	122.0
5.0	152,462,033.4	0.08	<b>0.00</b>	<b>0.00</b>	—	—	—	1,590.28	2.17	<b>0.03</b>	77.8	33.7	120.0	120.0	120.0	123.4	122.0
10.0	308,956,459.5	0.04	0.01	<b>0.00</b>	—	—	—	850.81	1.83	<b>0.05</b>	114.6	34.9	120.0	120.0	120.0	121.2	122.0
25.0	767,532,556.3	0.07	<b>0.00</b>	<b>0.00</b>	—	—	—	327.34	2.21	<b>0.09</b>	120.1	70.2	120.0	120.0	120.0	122.8	122.0
50.0	1,556,159,010.6	0.02	<b>0.00</b>	<b>0.00</b>	—	—	—	112.37	1.22	<b>0.09</b>	120.0	41.0	120.0	120.0	120.0	121.0	122.0
75.0	2,317,859,938.6	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	37.77	0.75	<b>0.07</b>	120.0	37.8	120.0	120.0	120.0	121.3	122.0
Avg		0.04	0.00	<b>0.00</b>	—	—	—	1,035.02	1.71	<b>0.07</b>	100.9	42.4	120.0	120.0	120.0	122.2	122.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	37.77	0.75	<b>0.03</b>	53.1	33.7	120.0	120.0	120.0	121.0	122.0
Max		0.08	0.01	<b>0.00</b>	—	—	—	3,291.52	2.21	<b>0.12</b>	120.1	70.2	120.0	120.0	120.0	123.7	122.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	7
Running time in seconds for writing input file ( $t^{\text{write}}$ )	1.7120
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.3280
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0131

File dispersion-qkp-wgeo\_2000\_075.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	75.0 %
Edges ( $m$ )	1,499,336

		Deviation from best OFV (%)								Running time (s)							
$\gamma$	Best OFV	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	QKBP	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	111,792,185.1	0.28	0.01	<b>0.00</b>	—	—	—	3,161.48	3.30	<b>0.12</b>	53.9	34.7	120.0	120.0	120.0	122.5	120.0
5.0	227,593,860.1	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	1,674.71	3.22	<b>0.03</b>	77.5	29.4	120.0	120.0	120.0	122.4	120.0
10.0	463,825,644.4	0.05	<b>0.00</b>	<b>0.00</b>	—	—	—	913.36	2.68	<b>0.04</b>	112.9	38.8	120.0	120.0	120.0	121.9	120.0
25.0	1,151,511,145.1	0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	309.17	2.80	<b>0.09</b>	120.0	81.4	120.0	120.0	120.0	121.9	120.0
50.0	2,308,727,831.2	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	111.00	2.45	<b>0.08</b>	120.1	41.5	120.0	120.0	120.0	121.4	120.0
75.0	3,423,035,319.3	0.05	<b>0.00</b>	<b>0.00</b>	—	—	—	38.39	0.98	<b>0.07</b>	120.1	38.7	120.0	120.0	120.0	122.9	120.0
Avg		0.07	0.00	<b>0.00</b>	—	—	—	1,034.69	2.57	<b>0.07</b>	100.8	44.1	120.0	120.0	120.0	122.2	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	38.39	0.98	<b>0.03</b>	53.9	29.4	120.0	120.0	120.0	121.4	120.0
Max		0.28	0.01	<b>0.00</b>	—	—	—	3,161.48	3.30	<b>0.12</b>	120.1	81.4	120.0	120.0	120.0	122.9	120.0

QKBP is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	7
Running time in seconds for writing input file ( $t^{\text{write}}$ )	2.5261
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.4220
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0124



File dispersion-qkp-wgeo\_2000\_100.txt

Property of graph	Value
Nodes ( $n$ )	2,000
Density ( $\Delta$ )	100.0 %
Edges ( $m$ )	1,999,000

$\gamma$	Best OFV	Deviation from best OFV (%)								Running time (s)							
		<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly	<b>QKBP</b>	RG	IHEA	LDP	DP	QK	Gurobi	Hexaly
2.5	146,032,229.0	0.25	<b>0.00</b>	<b>0.00</b>	—	—	—	2,910.50	3.90	<b>0.12</b>	52.9	38.4	120.0	120.0	120.0	122.4	120.0
5.0	298,463,595.0	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	1,848.74	3.28	<b>0.03</b>	78.8	44.0	120.0	120.0	120.0	121.4	120.0
10.0	610,606,846.5	0.04	<b>0.00</b>	<b>0.00</b>	—	—	—	927.63	3.64	<b>0.04</b>	113.7	35.9	120.0	120.0	120.0	121.2	120.0
25.0	1,552,149,249.5	0.03	<b>0.00</b>	<b>0.00</b>	—	—	—	316.29	3.18	<b>0.09</b>	120.1	44.9	120.0	120.0	120.0	121.7	120.0
50.0	3,108,906,506.1	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	107.83	2.21	<b>0.07</b>	120.0	43.3	120.0	120.0	120.0	122.8	120.0
75.0	4,618,504,994.4	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	38.83	1.00	<b>0.07</b>	120.0	39.7	120.0	120.0	120.0	121.2	120.0
Avg		0.05	<b>0.00</b>	<b>0.00</b>	—	—	—	1,024.97	2.87	<b>0.07</b>	100.9	41.1	120.0	120.0	120.0	121.8	120.0
Min		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	—	—	—	38.83	1.00	<b>0.03</b>	52.9	35.9	120.0	120.0	120.0	121.2	120.0
Max		0.25	<b>0.00</b>	<b>0.00</b>	—	—	—	2,910.50	3.90	<b>0.12</b>	120.1	44.9	120.0	120.0	120.0	122.8	120.0

**QKBP** is the contribution in this paper

QKBP-specific information	Value
Number of breakpoints	9
Running time in seconds for writing input file ( $t^{\text{write}}$ )	3.3966
Running time in seconds for executing parametric cut procedure ( $t^{\text{cut}}$ )	0.5630
Running time in seconds for reading result file ( $t^{\text{read}}$ )	0.0133