Appendix B
Configurations for the nD-OPP's Obtained by the 'Test-Box' Algorithms

When we refer to the <u>Recursive 'Test-Box' (Case 1)</u> Algorithm we are considering the case when a 'Test-Box' is positioned in all the empty hyper-octants in a combination. The <u>Recursive 'Test-Box' (Case 2)</u> Algorithm refers the case when a 'Test-Box' is positioned only in the empty hyper-octants embedded in $\mathbb{R}_k^-$. See **Section 3.8** for more details.

B.1. Configurations According to the Equivalence Relation $R_E + R_H + R_{adj}$

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Iterative 'Test-Box'	Analyzed Combinations	$\sum_{i=0}^{2^n} CTB_{n,(R_E+R_H+R_{adj}),i} \cdot (2^n - i)$
1	3	4	3	3	3
2	6	16	6	12	12
3	22	256	22	88	88
4	340	65,336	340	2,720	2,720
5			119,545	1,913,198	1,913,198

Table B.1. Exhaustive Algorithm Countings Vs. Iterative 'Test-Box' Countings under Equivalence Relation $R_E + R_H + R_{adj}$

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 1	Analyzed Combinations	$\sum_{k=1}^{n}\left(\sum_{i=0}^{2^k} CTB_{k,(R_E+R_H+R_{adj}),i} \cdot (2^k - i)\right)$
1	3	4	3	3	3
2	6	16	6	15	15
3	22	256	22	103	103
4	340	65,336	340	2,823	2,823
5			119,934	1,922,250	1,922,250

Table B.2. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 1) Countings under Equivalence Relation $R_E + R_H + R_{adj}$

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 2	Analyzed Combinations	$\sum_{k=1}^{n} 2^{k-1}\left(\sum_{i=0}^{2^k} CTB_{k,(R_E+R_H+R_{adj}),i}\right)$
1	3	4	3	3	3
2	6	16	6	11	15
3	22	256	22	70	103
4	340	65,336	339	1,870	2,815
5			117,651	1,213,902	1,885,231

Table B.3. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 2) Countings under Equivalence Relation $R_E + R_H + R_{adj}$

B.2. Configurations According to the Equivalence Relation R_{adj}

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Iterative 'Test-Box'	Analyzed Combinations	$\sum_{i=0}^{2^n} CTB_{n,R_{adj},i} \cdot (2^n - i)$
1	3	4	3	3	3
2	6	16	6	12	12
3	22	256	22	88	88
4	253	65,336	253	2,024	2,024
5			20,931	334,961	334,961

Table B.4. Exhaustive Algorithm Countings Vs. Iterative 'Test-Box' Countings under Equivalence Relation R_{adj}

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' (Case 1)	Analyzed Combinations	$\sum_{k=1}^{n}\left(\sum_{i=0}^{2^k} CTB_{k,R_{adj},i} \cdot (2^k - i)\right)$
1	3	4	3	3	3
2	6	16	6	15	15
3	22	256	22	103	103
4	253	65,336	253	2,127	2,127
5			20,918	336,931	336,931

Table B.5. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 1) Countings under Equivalence Relation R_{adj}

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 2	Analyzed Combinations	$\sum_{k=1}^{n} 2^{k-1}\left(\sum_{i=0}^{2^k} CTB_{k,R_{adj},i}\right)$
1	3	4	3	3	3
2	6	16	6	11	15
3	22	256	22	70	103
4	253	65,336	250	1,401	2,103
5			20,743	219,634	333,991

Table B.6. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 2) Countings under Equivalence Relation R_{adj}

B.3. Configurations According to the Equivalence Relation R_H

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Iterative 'Test-Box'	Analyzed Combinations	$\sum_{i=0}^{2^n} CTB_{n,R_H,i} \cdot (2^n - i)$
1	3	4	3	3	3
2	6	16	6	12	12
3	19	256	19	76	76
4	147	65,336	147	1,176	1,176
5			4,091	65,349	65,349

Table B.7. Exhaustive Algorithm Countings Vs. Iterative 'Test-Box' Countings under Equivalence Relation R_H

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 1	Analyzed Combinations	$\sum_{k=1}^{n}\left(\sum_{i=0}^{2^k} CTB_{k,R_H,i} \cdot (2^k - i)\right)$
1	3	4	3	3	3
2	6	16	6	15	15
3	19	256	19	91	91
4	147	65,336	147	1,267	1,267
5			4,114	67,027	67,027

Table B.8. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 1) Countings under Equivalence Relation R_H

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 2	Analyzed Combinations	$\sum_{k=1}^{n} 2^{k-1}\left(\sum_{i=0}^{2^k} CTB_{k,R_H,i}\right)$
1	3	4	3	3	3
2	6	16	6	11	13
3	19	256	19	63	89
4	147	65,336	146	868	1,257
5			4,022	44,580	65,609

Table B.9. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 2) Countings under Equivalence Relation R_H

B.4. Configurations According to the Equivalence Relation R_E

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Iterative 'Test-Box'	Analyzed Combinations	$\sum_{i=0}^{2^n} CTB_{n,R_E,i} \cdot (2^n - i)$
1	3	4	3	3	3
2	6	16	6	12	12
3	16	256	15	62	62
4	43	65,336	37	314	314
5			89	1,530	1,530

Table B.10. Exhaustive Algorithm Countings Vs. Iterative 'Test-Box' Countings under Equivalence Relation R_E

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 1	Analyzed Combinations	$\sum_{k=1}^{n}\left(\sum_{i=0}^{2^k} CTB_{k,R_E,i} \cdot (2^k - i)\right)$
1	3	4	3	3	3
2	6	16	6	15	15
3	16	256	15	77	77
4	43	65,336	37	391	391
5			89	1,921	1,921

Table B.11. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 2) Countings under Equivalence Relation R_E

n	Configurations: Exhaustive Algorithm	Analyzed Combinations	Configurations: Recursive 'Test-Box' Case 2	Analyzed Combinations	$\sum_{k=1}^{n} 2^{k-1}\left(\sum_{i=0}^{2^k} CTB_{k,R_E,i}\right)$
1	3	4	3	3	3
2	6	16	6	11	13
3	16	256	15	55	73
4	43	65,336	37	285	369
5			89	1,415	1,793

Table B.12. Exhaustive Algorithm Countings Vs. Recursive 'Test-Box' (Case 2) Countings under Equivalence Relation R_E