

# All possible hopping term of four state in Fock representation

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term: (0, 0) mat_elmt: ( 1,  1),  1
term: (0, 0) mat_elmt: ( 3,  3),  1
term: (0, 0) mat_elmt: ( 5,  5),  1
term: (0, 0) mat_elmt: ( 7,  7),  1
term: (0, 0) mat_elmt: ( 9,  9),  1
term: (0, 0) mat_elmt: (11, 11),  1
term: (0, 0) mat_elmt: (13, 13),  1
term: (0, 0) mat_elmt: (15, 15),  1
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term: (0, 1) mat_elmt: ( 1,  2),  1
term: (0, 1) mat_elmt: ( 5,  6),  1
term: (0, 1) mat_elmt: ( 9, 10),  1
term: (0, 1) mat_elmt: (13, 14),  1
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term: (0, 2) mat_elmt: ( 1,  4),  1
term: (0, 2) mat_elmt: ( 3,  6), -1
term: (0, 2) mat_elmt: ( 9, 12),  1
term: (0, 2) mat_elmt: (11, 14), -1
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term: (0, 3) mat_elmt: ( 1,  8),  1
term: (0, 3) mat_elmt: ( 3, 10), -1
term: (0, 3) mat_elmt: ( 5, 12), -1
term: (0, 3) mat_elmt: ( 7, 14),  1
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```

```
term: (1, 0) mat_elmt: ( 2,  1),  1
term: (1, 0) mat_elmt: ( 6,  5),  1
term: (1, 0) mat_elmt: (10,  9),  1
term: (1, 0) mat_elmt: (14, 13),  1
=====
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```
term: (1, 1) mat_elmt: ( 2,  2),  1
term: (1, 1) mat_elmt: ( 3,  3),  1
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term: (1, 1) mat\_elmt: ( 6, 6), 1  
term: (1, 1) mat\_elmt: ( 7, 7), 1  
term: (1, 1) mat\_elmt: (10, 10), 1  
term: (1, 1) mat\_elmt: (11, 11), 1  
term: (1, 1) mat\_elmt: (14, 14), 1  
term: (1, 1) mat\_elmt: (15, 15), 1  
=====

term: (1, 2) mat\_elmt: ( 2, 4), 1  
term: (1, 2) mat\_elmt: ( 3, 5), 1  
term: (1, 2) mat\_elmt: (10, 12), 1  
term: (1, 2) mat\_elmt: (11, 13), 1  
=====

term: (1, 3) mat\_elmt: ( 2, 8), 1  
term: (1, 3) mat\_elmt: ( 3, 9), 1  
term: (1, 3) mat\_elmt: ( 6, 12), -1  
term: (1, 3) mat\_elmt: ( 7, 13), -1  
=====

term: (2, 0) mat\_elmt: ( 4, 1), 1  
term: (2, 0) mat\_elmt: ( 6, 3), -1  
term: (2, 0) mat\_elmt: (12, 9), 1  
term: (2, 0) mat\_elmt: (14, 11), -1  
=====

term: (2, 1) mat\_elmt: ( 4, 2), 1  
term: (2, 1) mat\_elmt: ( 5, 3), 1  
term: (2, 1) mat\_elmt: (12, 10), 1  
term: (2, 1) mat\_elmt: (13, 11), 1  
=====

term: (2, 2) mat\_elmt: ( 4, 4), 1  
term: (2, 2) mat\_elmt: ( 5, 5), 1  
term: (2, 2) mat\_elmt: ( 6, 6), 1  
term: (2, 2) mat\_elmt: ( 7, 7), 1  
term: (2, 2) mat\_elmt: (12, 12), 1  
term: (2, 2) mat\_elmt: (13, 13), 1  
term: (2, 2) mat\_elmt: (14, 14), 1

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term: (2, 2) mat_elmt: (15, 15), 1
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term: (2, 3) mat_elmt: ( 4,  8), 1
term: (2, 3) mat_elmt: ( 5,  9), 1
term: (2, 3) mat_elmt: ( 6, 10), 1
term: (2, 3) mat_elmt: ( 7, 11), 1
=====

term: (3, 0) mat_elmt: ( 8,  1), 1
term: (3, 0) mat_elmt: (10,  3), -1
term: (3, 0) mat_elmt: (12,  5), -1
term: (3, 0) mat_elmt: (14,  7), 1
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term: (3, 1) mat_elmt: ( 8,  2), 1
term: (3, 1) mat_elmt: ( 9,  3), 1
term: (3, 1) mat_elmt: (12,  6), -1
term: (3, 1) mat_elmt: (13,  7), -1
=====

term: (3, 2) mat_elmt: ( 8,  4), 1
term: (3, 2) mat_elmt: ( 9,  5), 1
term: (3, 2) mat_elmt: (10,  6), 1
term: (3, 2) mat_elmt: (11,  7), 1
=====

term: (3, 3) mat_elmt: ( 8,  8), 1
term: (3, 3) mat_elmt: ( 9,  9), 1
term: (3, 3) mat_elmt: (10, 10), 1
term: (3, 3) mat_elmt: (11, 11), 1
term: (3, 3) mat_elmt: (12, 12), 1
term: (3, 3) mat_elmt: (13, 13), 1
term: (3, 3) mat_elmt: (14, 14), 1
term: (3, 3) mat_elmt: (15, 15), 1
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