I came up with different metrics on how to evaluate a position. There were:

1. Mobility: #own moves - #opponent moves
2. Centrality of moves available
3. Common moves with opponent
4. Emptiness of board \* Proximity to the center
5. - Emptiness of bard \* common moves
6. - Distance to the center
7. - Player is in a corner

I tried different combinations of these metrics to find promising heuristics. Here are the win rate each combination yielded. AB\_Improved’s result is in parenthesis to give a baseline for each test as the starting positions are randomized. In the end, the effectiveness of the heuristic should be considered as the improvement with respect to pure AB\_Improved, especially as AB\_Improved would be the application of metric A alone. Note that E, F and G are subtracted from the value of a position.

ABCDE 🡪 72.9% (AB\_I 54.3%): +18.6%

ABDE 🡪 67.1% (AB\_I 55.7%): +11.4%

ABCD 🡪 70% (AB\_I 57.1%): +12.9%

ACD 🡪 58.6% (AB\_I 62.9%): -4.3%

AB 🡪 ~70% (AB\_I 50%): +20%

ABCDEF 🡪 ~61% (AB\_I 64%): -3%

ABCDEG 🡪 ~75.7% (AB\_I 60%): +15.7%

I would need a lot more data to reach conclusions on what is a good strategy for the isolation game, and also to reach conclusions on which of my metrics are really good. But, from the tests I did, it looks like good components for an efficient heuristic can be: to stay far from corners, to maximize mobility, to look forward to moves that bring you towards the center.

Here a comparison of three of my most promising heuristics: ABCDEG, ABCDE, AB

Match # Opponent AB\_Improved AB\_Custom AB\_Custom\_2 AB\_Custom\_3

Won | Lost Won | Lost Won | Lost Won | Lost

1 Random 8 | 2 10 | 0 10 | 0 10 | 0

2 MM\_Open 4 | 6 6 | 4 5 | 5 6 | 4

3 MM\_Center 8 | 2 10 | 0 8 | 2 9 | 1

4 MM\_Improved 6 | 4 8 | 2 6 | 4 7 | 3

5 AB\_Open 6 | 4 7 | 3 5 | 5 5 | 5

6 AB\_Center 4 | 6 5 | 5 5 | 5 4 | 6

7 AB\_Improved 6 | 4 7 | 3 6 | 4 5 | 5

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Win Rate: 60.0% 75.7% 72.9% 65.7%