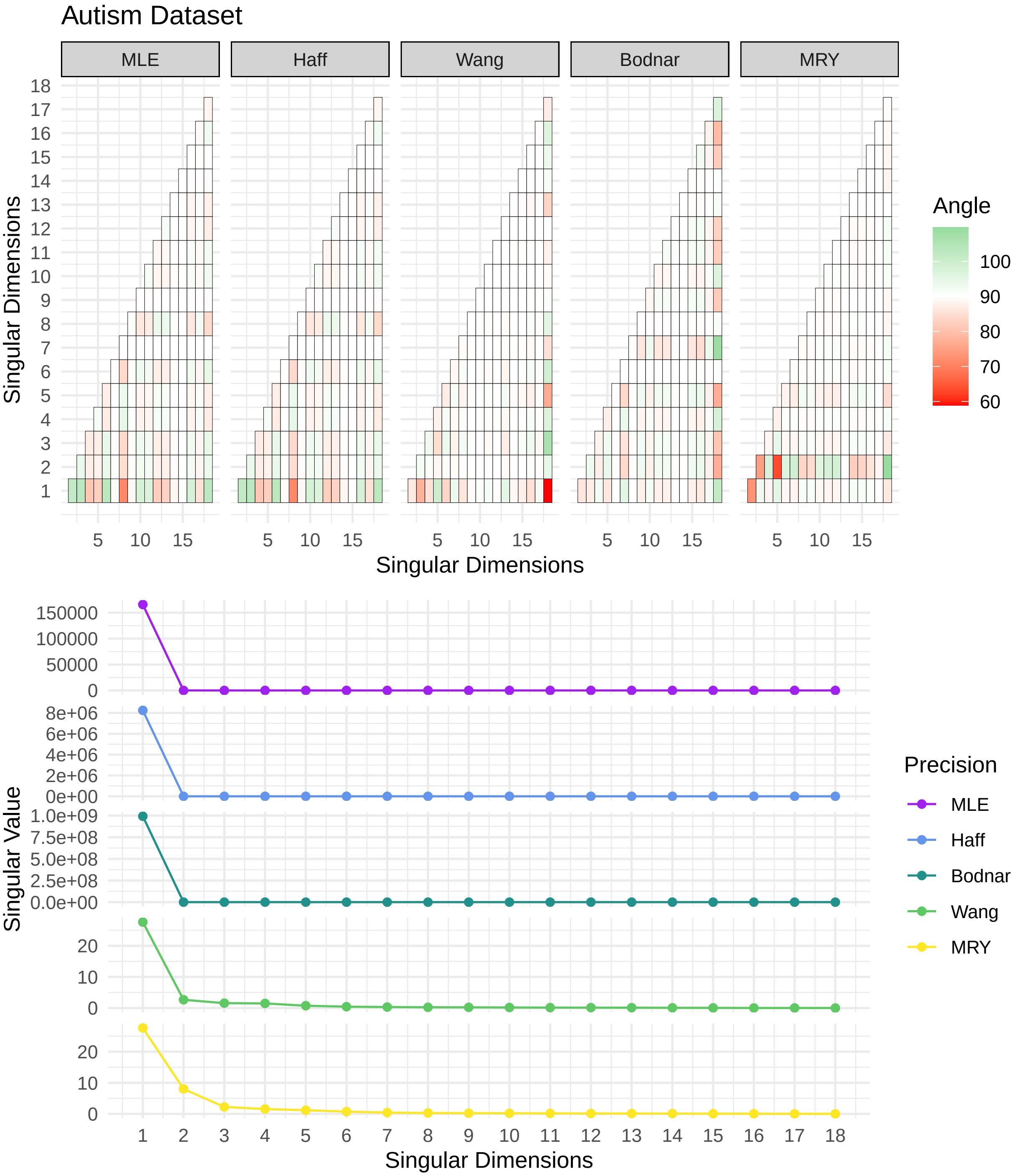
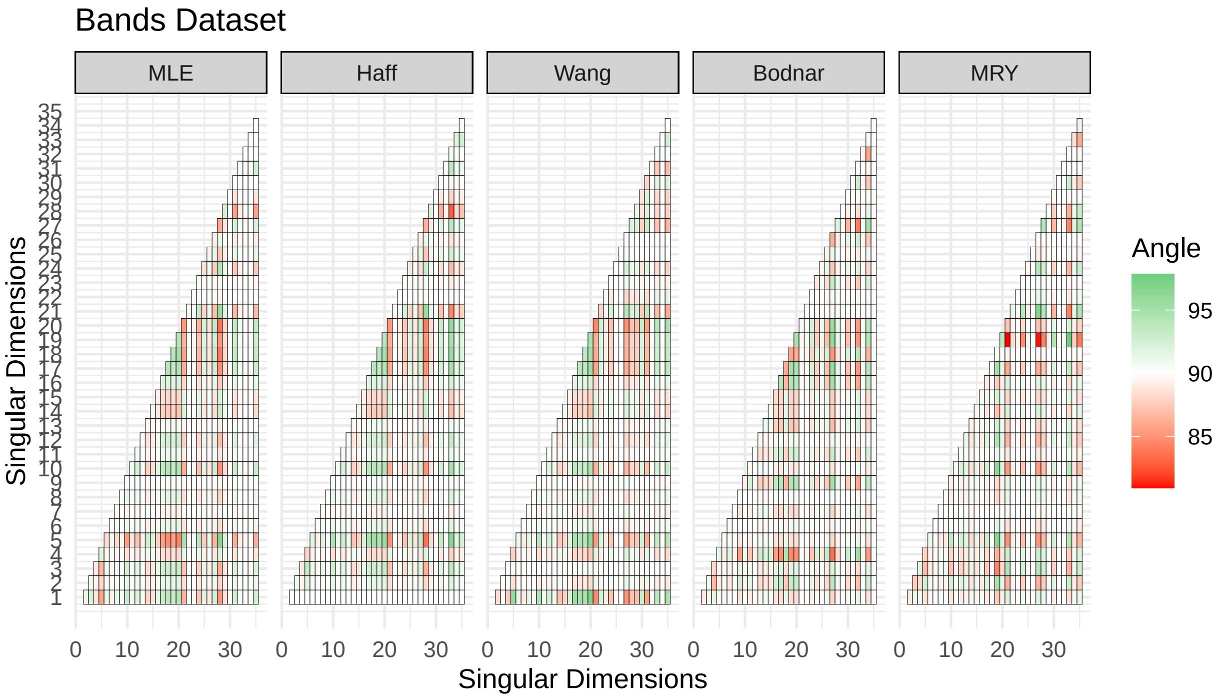
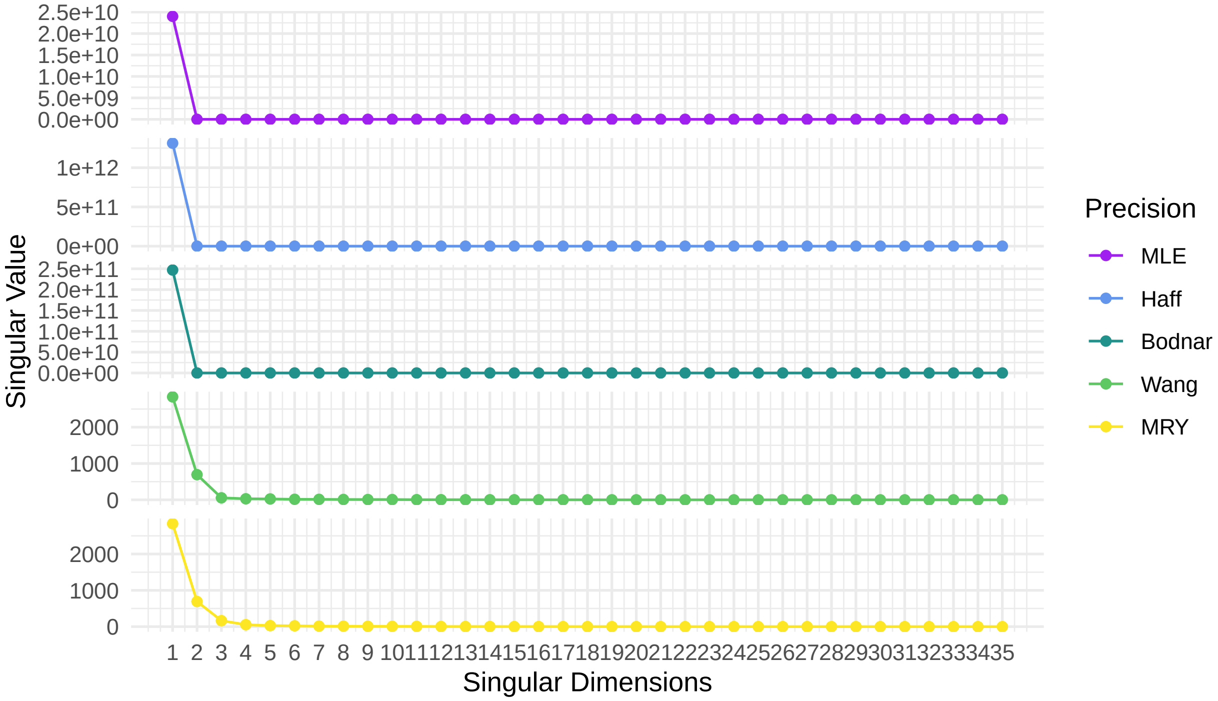
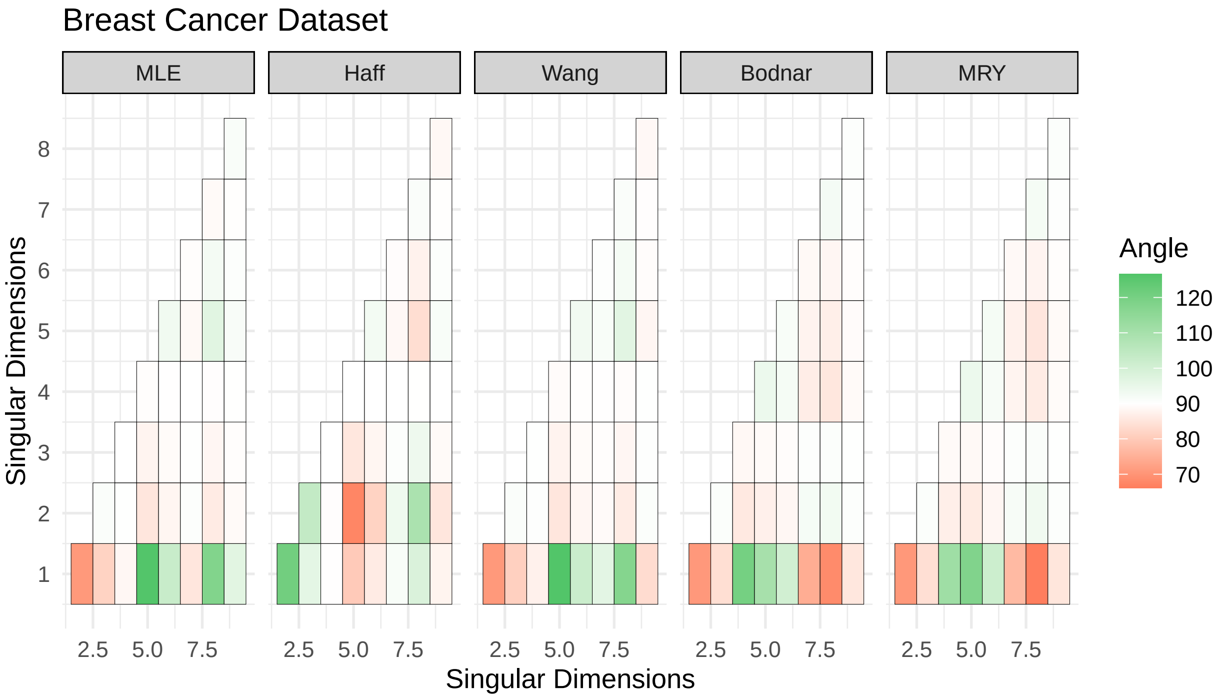
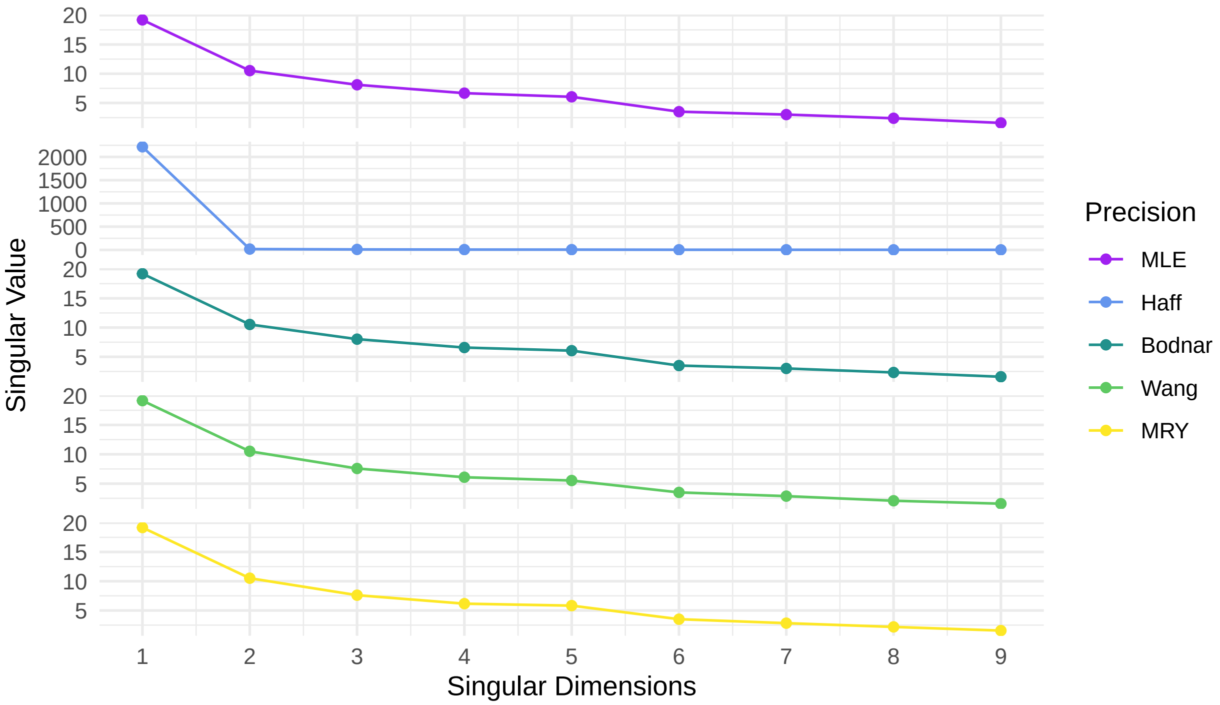
Singular Dimension Analysis of $\widehat{\boldsymbol{M}}$ Matrices

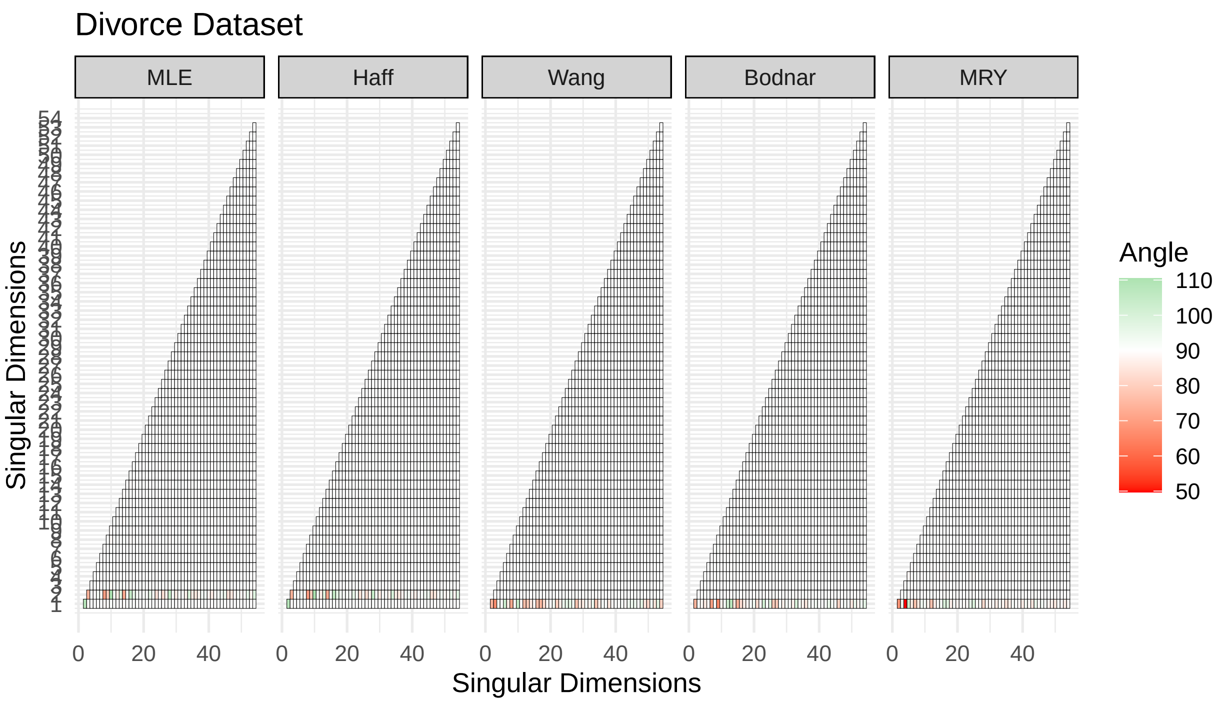


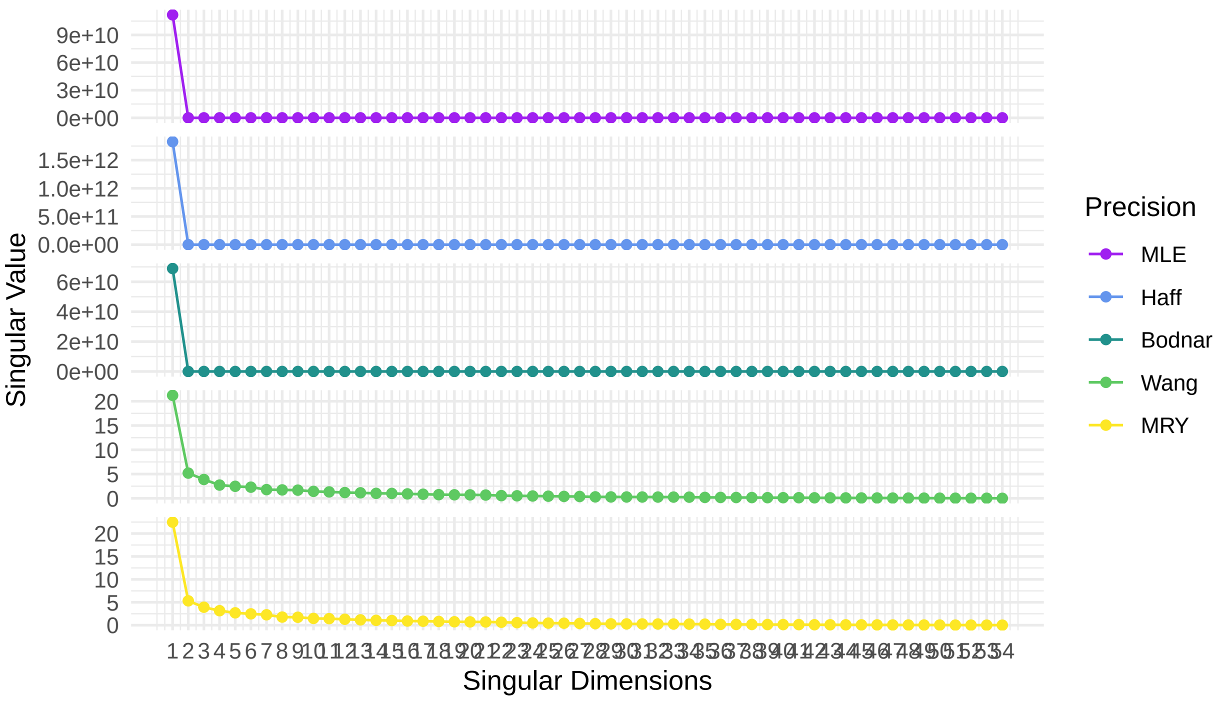

Bands Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
0
10
20
30
Singular Dimensions
Angle
95
90
85

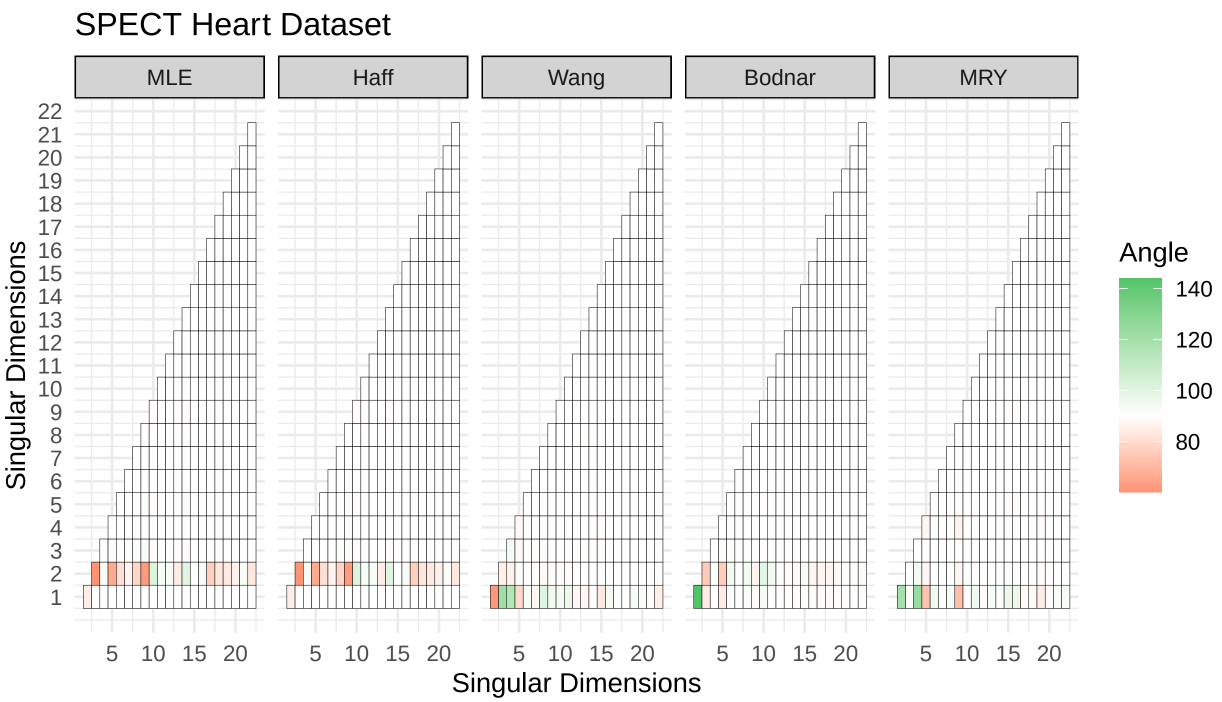

2.5e+10
2.0e+10
1.5e+10
1.0e+10
5.0e+09
0.0e+00
1e+12
5e+11
0e+00
2.5e+11
2.0e+11
1.5e+11
1.0e+11
5.0e+10
0.0e+00
2000
1000
0
2000
1000
0
Singular Value
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY

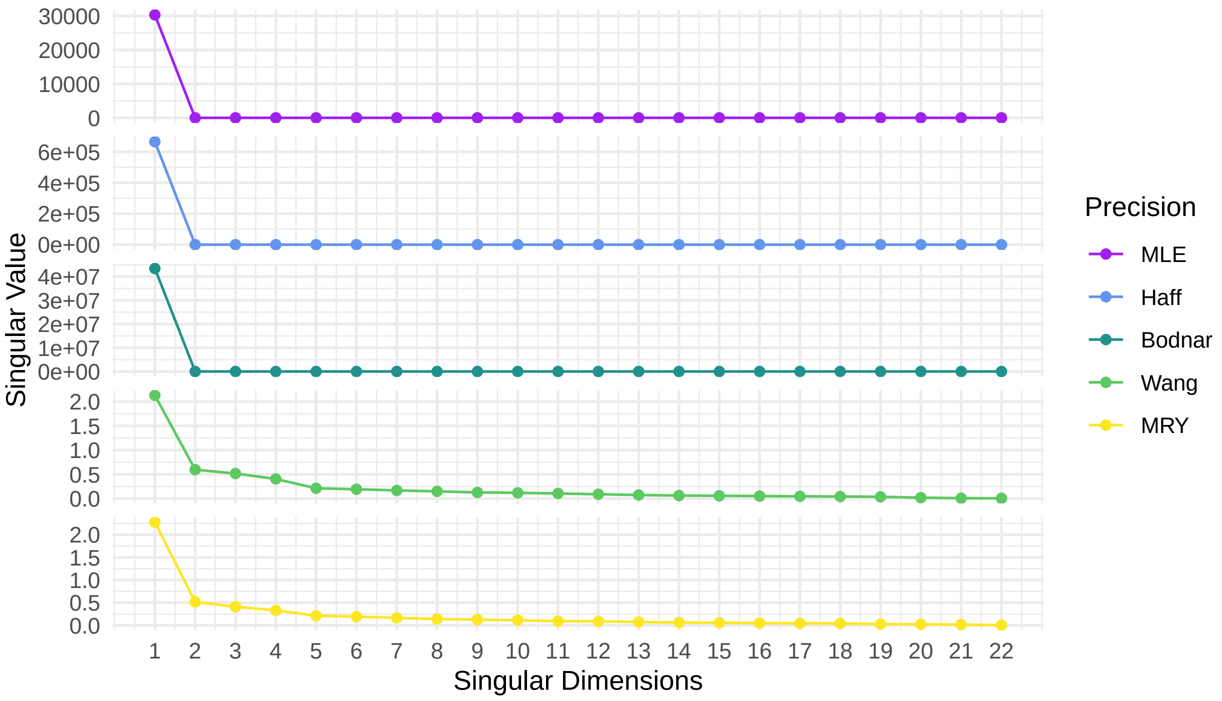

Breast Cancer Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1
2
3
4
5
6
7
8
2.5
5.0
7.5
Singular Dimensions
Angle
120
110
100
90
80
70

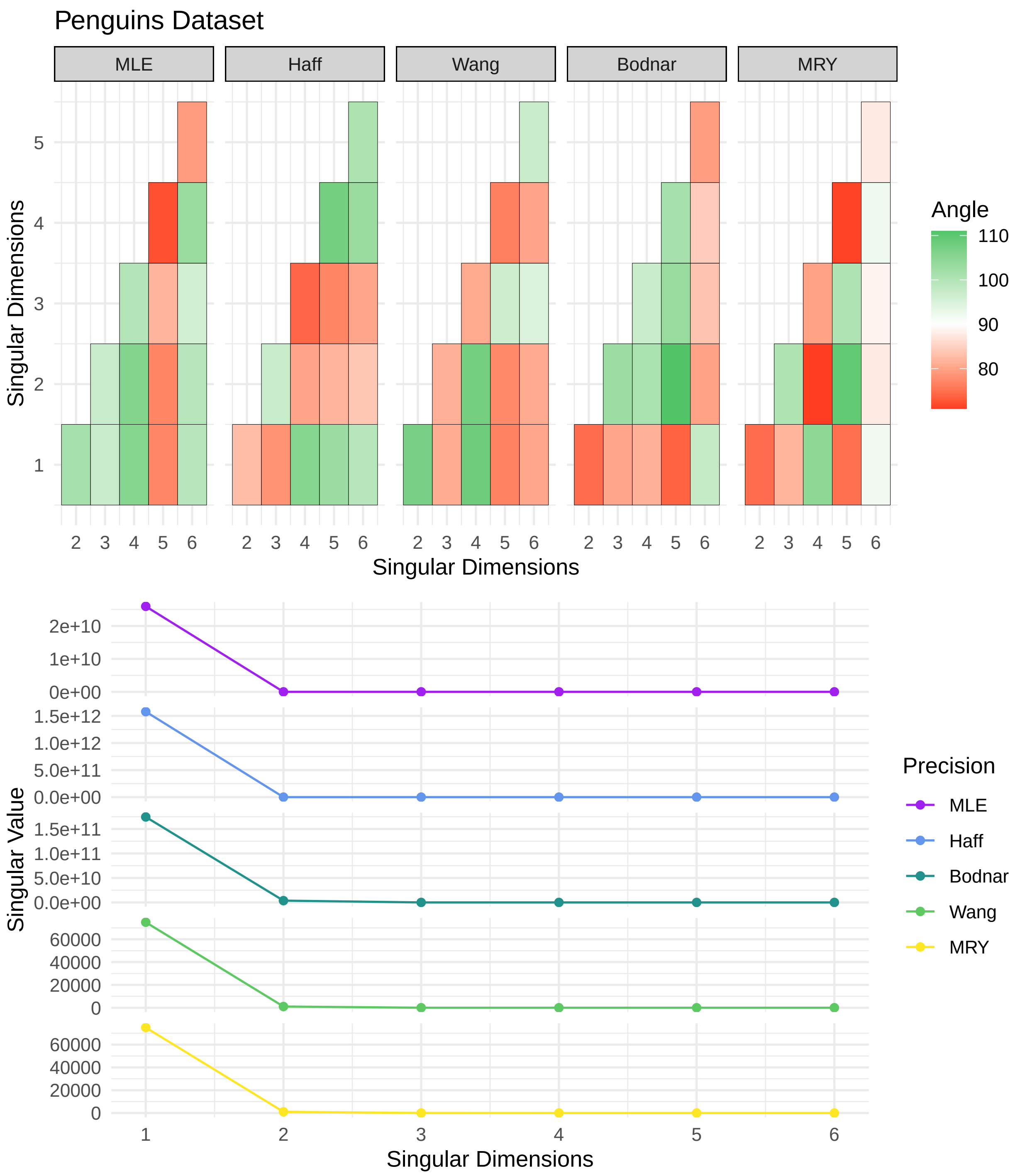

Singular Value
20
15
10
5
2000
1500
1000
500
0
1
2
3
4
5
6
7
8
9
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY

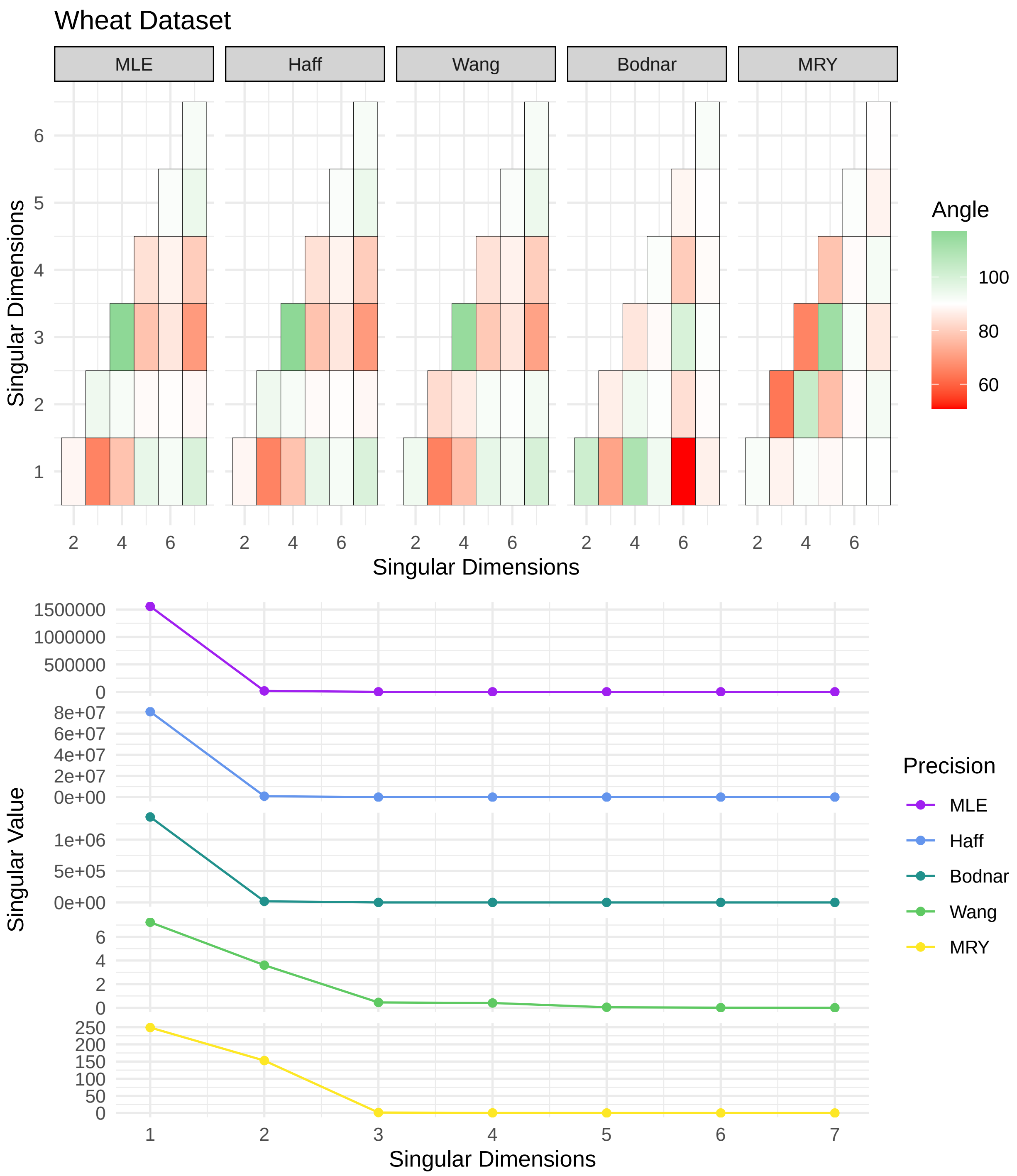

Divorce Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
Singular Dimensions
0
20
40
Angle
110
100
90
80
70
60
50

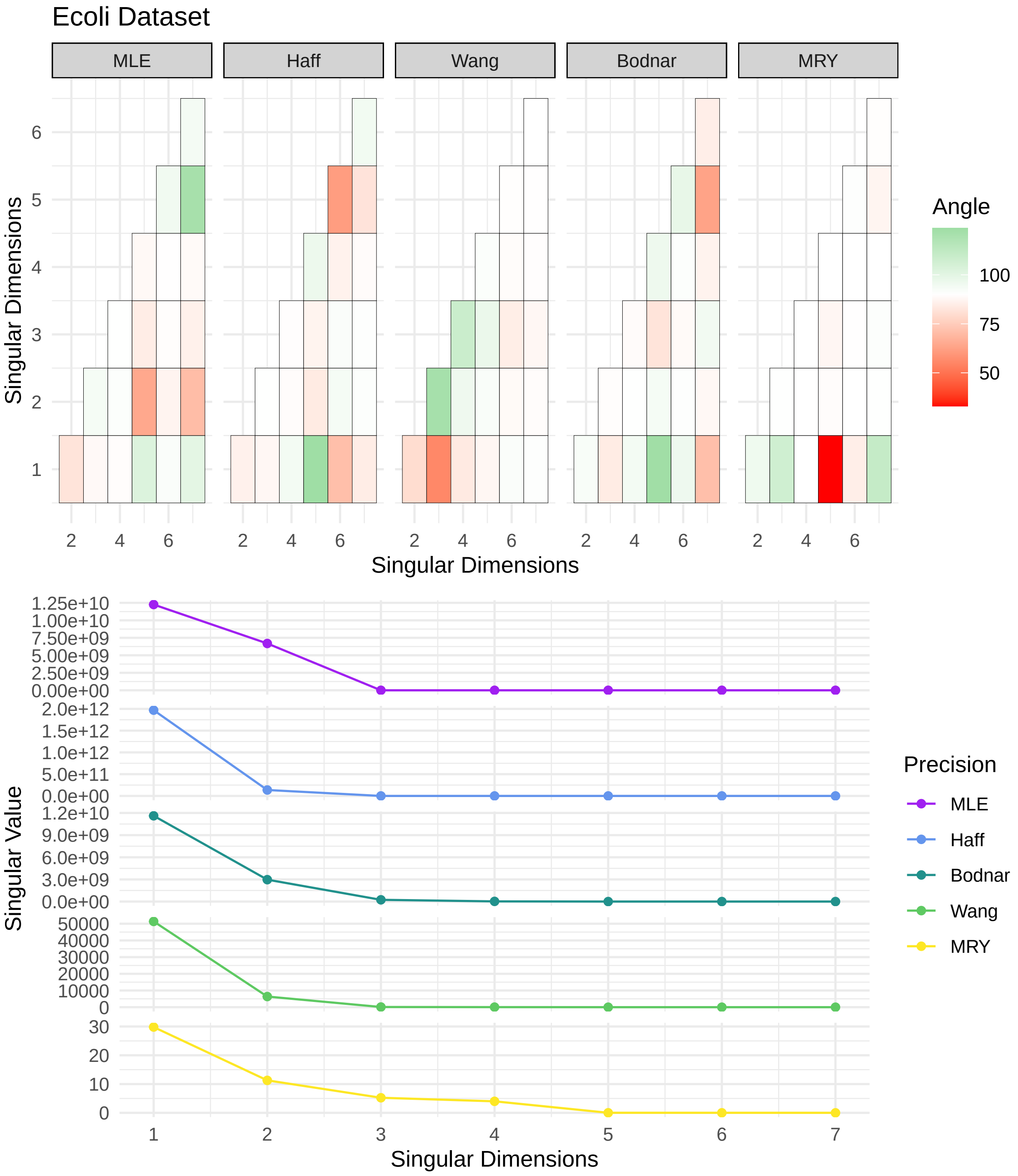

Singular Value
9e+10
6e+10
3e+10
0e+00
1.5e+12
1.0e+12
5.0e+11
0.0e+00
6e+10
4e+10
2e+10
0e+00
20
15
10
5
0
20
15
10
5
0
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY

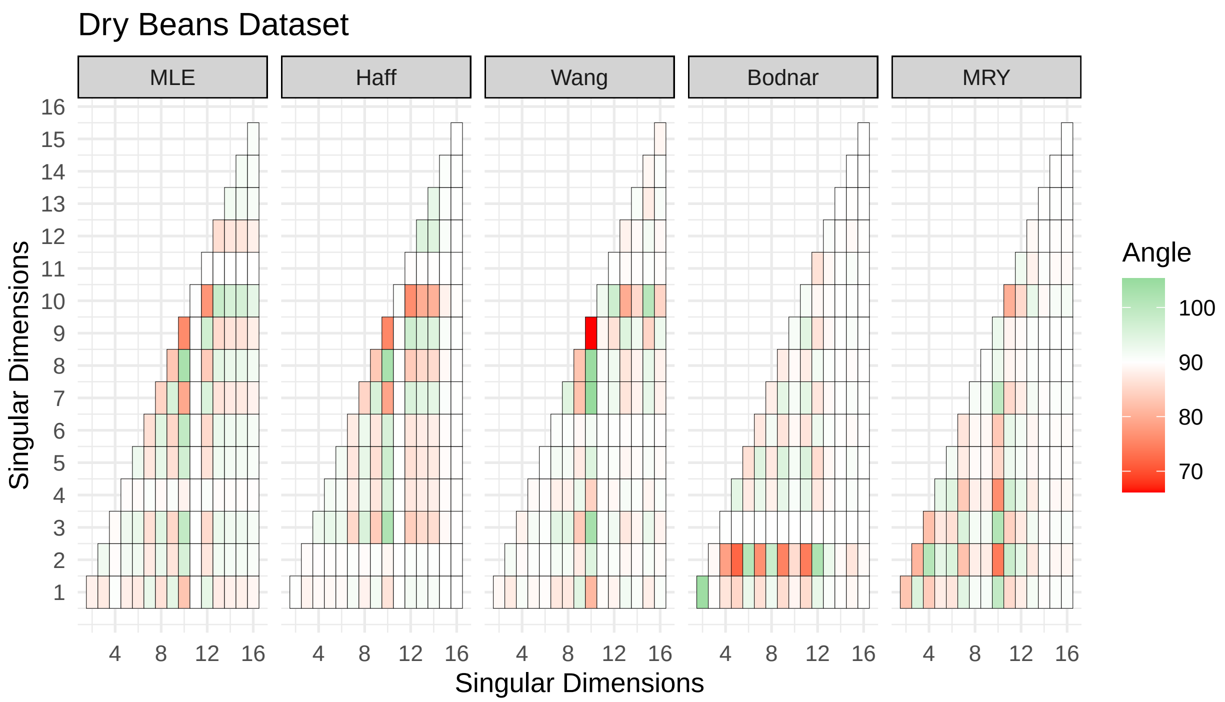

SPECT Heart Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Singular Dimensions
5 10 15 20
Angle
140
120
100
80

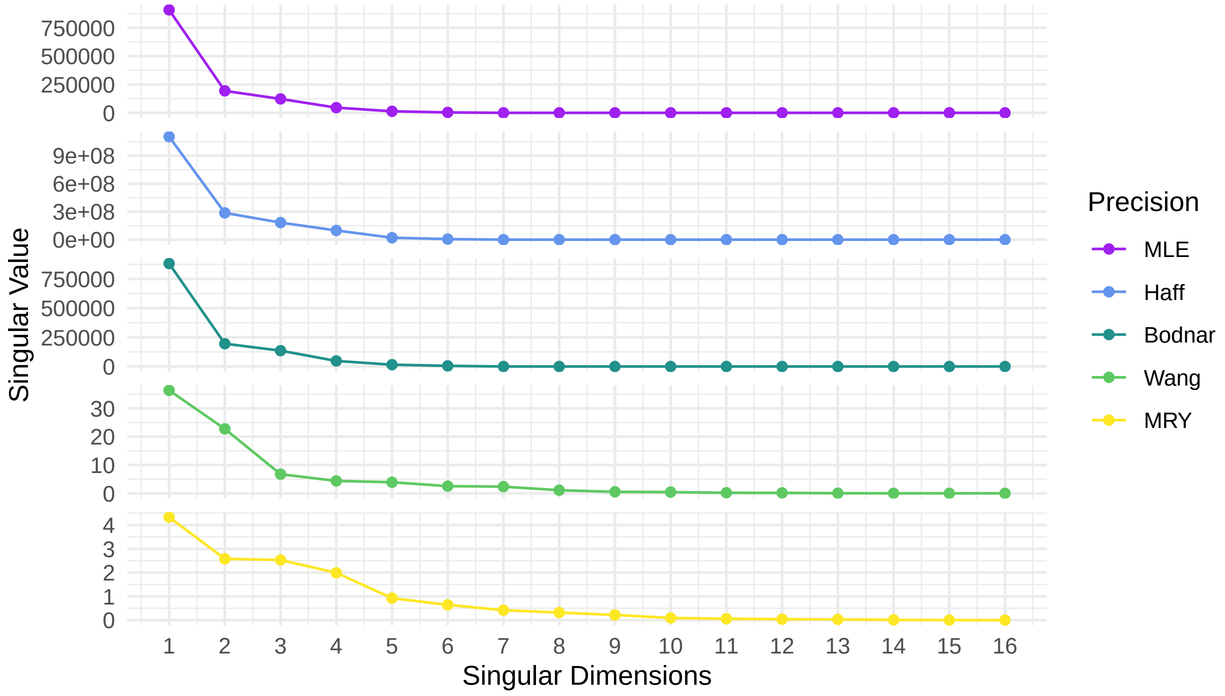

Singular Value
30000
20000
10000
0
6e+05
4e+05
2e+05
0e+00
4e+07
3e+07
2e+07
1e+07
0e+00
2.0
1.5
1.0
0.5
0.0
2.0
1.5
1.0
0.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY


Penguins Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1
2
3
4
5
2
3
4
5
6
Singular Dimensions
Angle
110
100
90
80
2e+10
1e+10
0e+00
1.5e+12
1.0e+12
5.0e+11
0.0e+00
1.5e+11
1.0e+11
5.0e+10
0.0e+00
60000
40000
20000
0
60000
40000
20000
0
Singular Value
1
2
3
4
5
6
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY


Wheat Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1
2
3
4
5
6
2
4
6
Singular Dimensions
Angle
100
80
60
Singular Value
1500000
1000000
500000
0
8e+07
6e+07
4e+07
2e+07
0e+00
1e+06
5e+05
0e+00
6
4
2
0
250
200
150
100
50
0
1
2
3
4
5
6
7
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY


Ecoli Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1
2
3
4
5
6
2
4
6
Singular Dimensions
Angle
100
75
50
Singular Value
1.25e+10
1.00e+10
7.50e+09
5.00e+09
2.50e+09
0.00e+00
2.0e+12
1.5e+12
1.0e+12
5.0e+11
0.0e+00
1.2e+10
9.0e+09
6.0e+09
3.0e+09
0.0e+00
50000
40000
30000
20000
10000
0
30
20
10
0
1
2
3
4
5
6
7
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY


Dry Beans Dataset
MLE
Haff
Wang
Bodnar
MRY
Singular Dimensions
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
4
8
12
16
Singular Dimensions
Angle
100
90
80
70


Singular Value
750000
500000
250000
0
9e+08
6e+08
3e+08
0e+00
750000
500000
250000
0
30
20
10
0
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Singular Dimensions
Precision
MLE
Haff
Bodnar
Wang
MRY