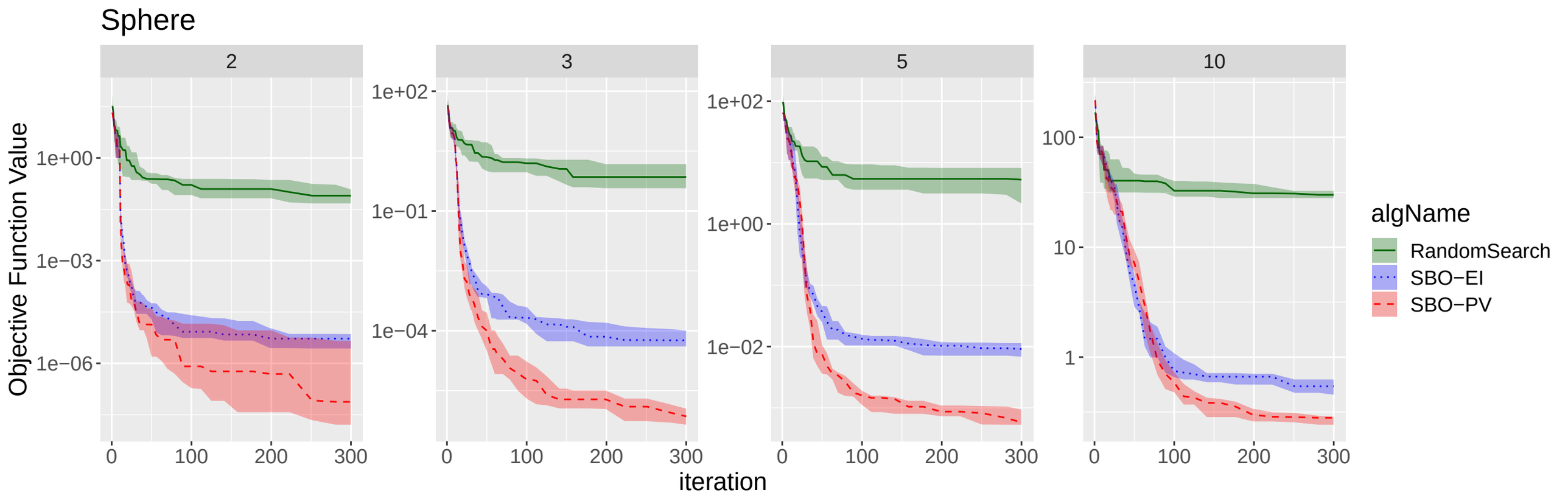
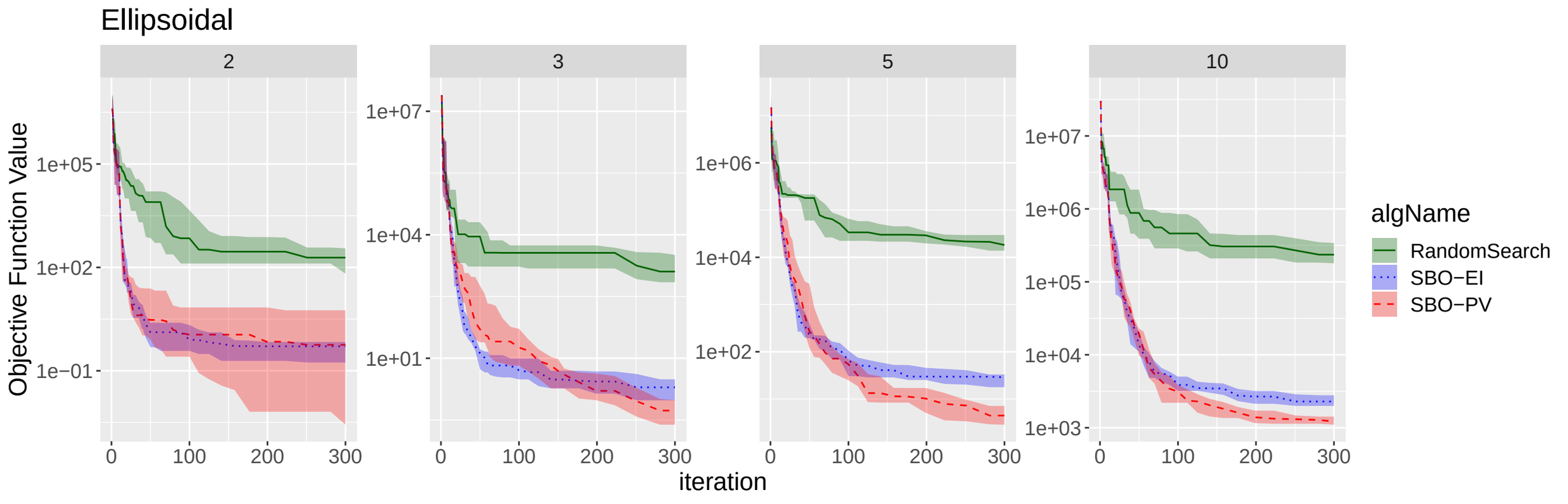
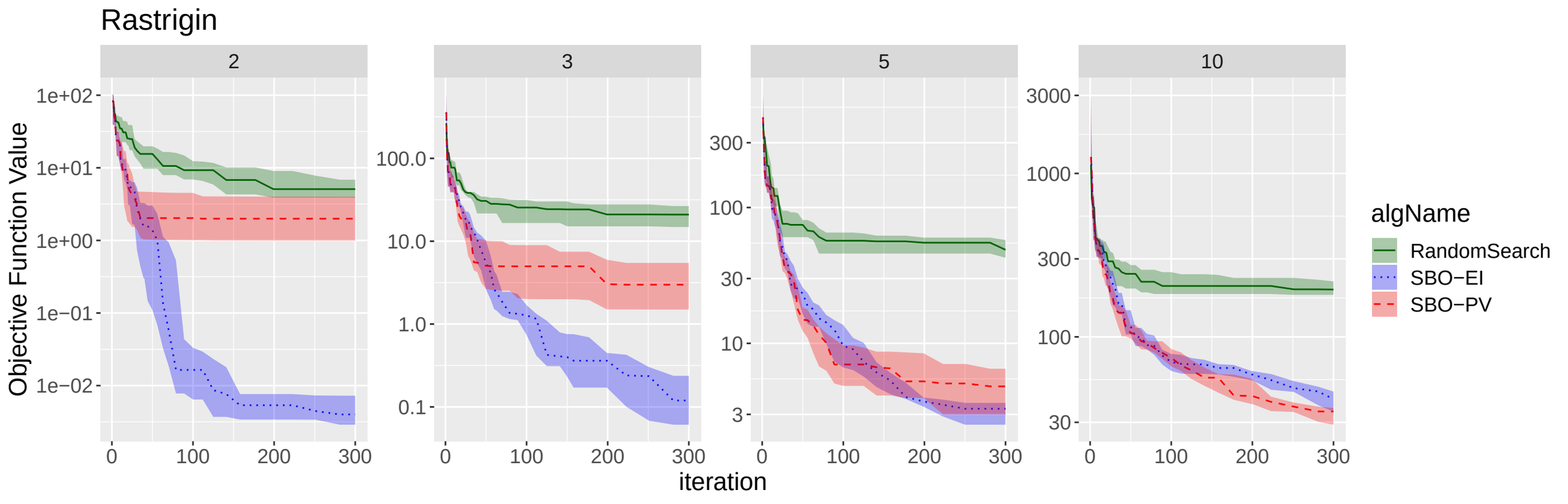
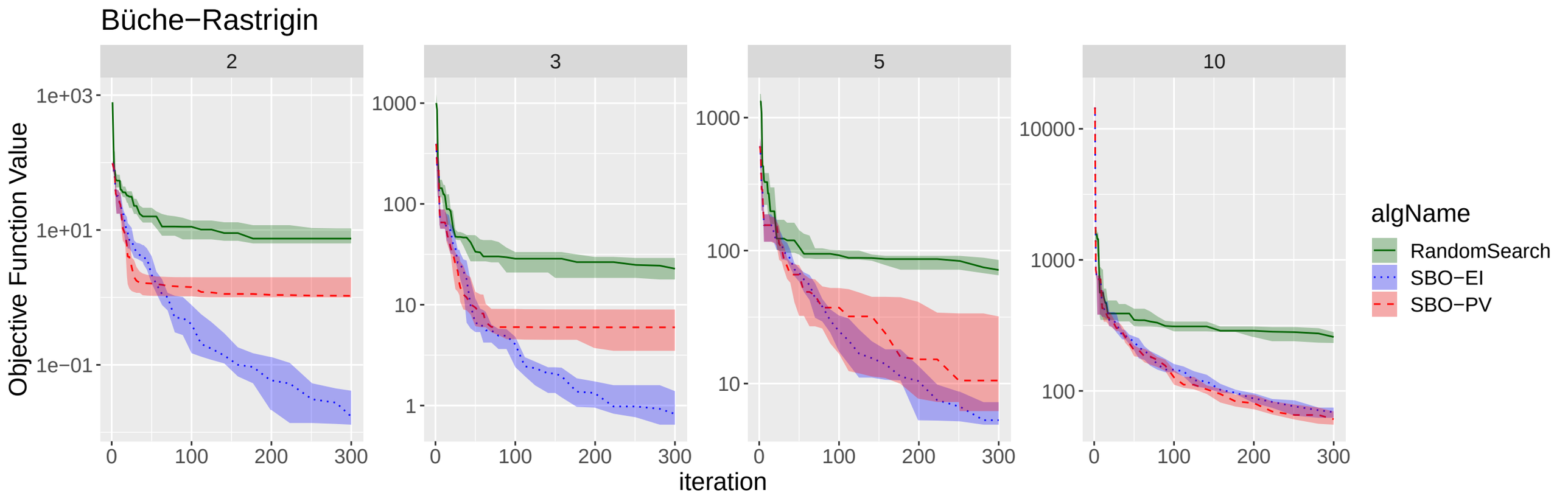
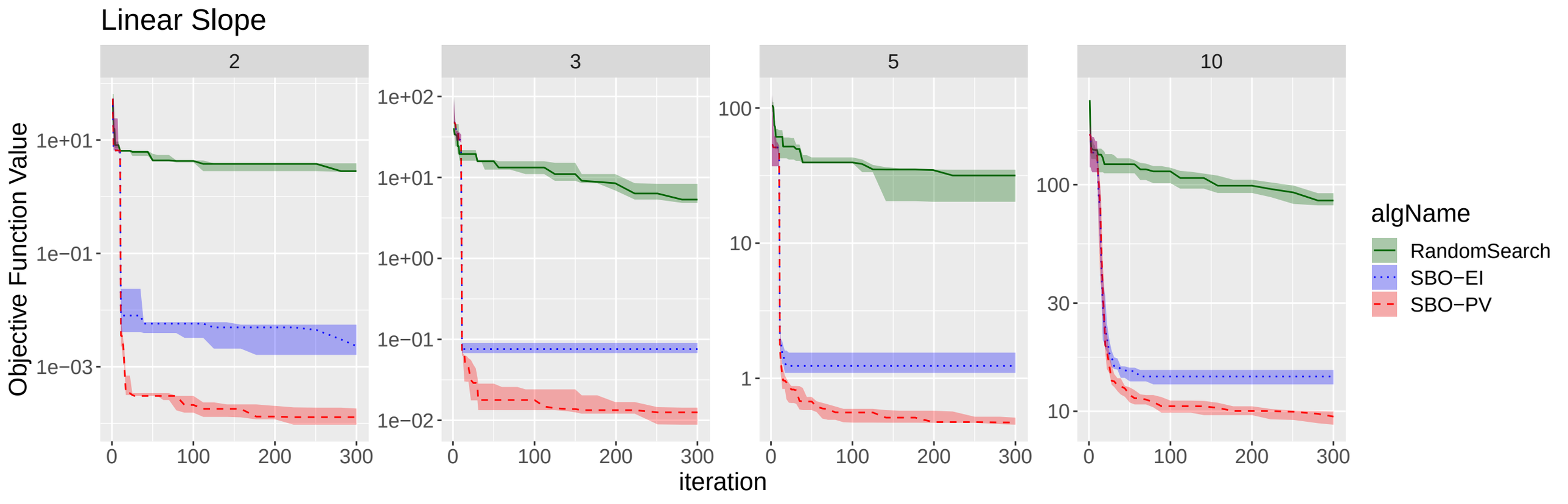
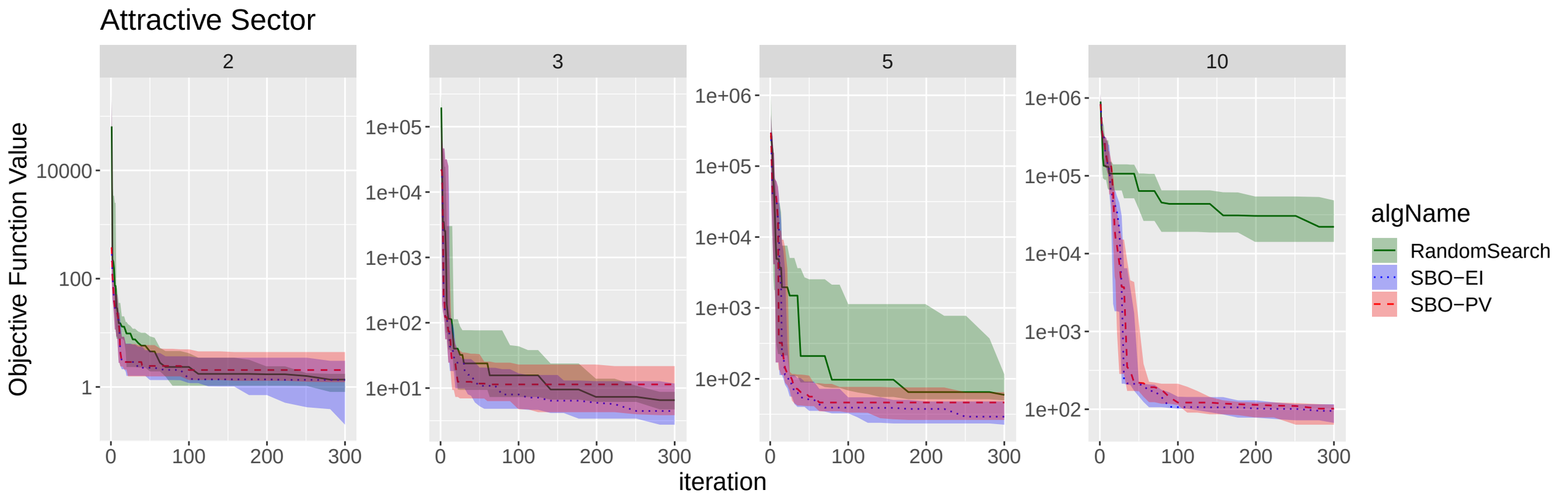

Sphere
2
3
5
10
Objective Function Value
1e+00
1e−03
1e−06
1e+02
1e−01
1e−04
1e+02
1e+00
1e−02
100
10
1
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

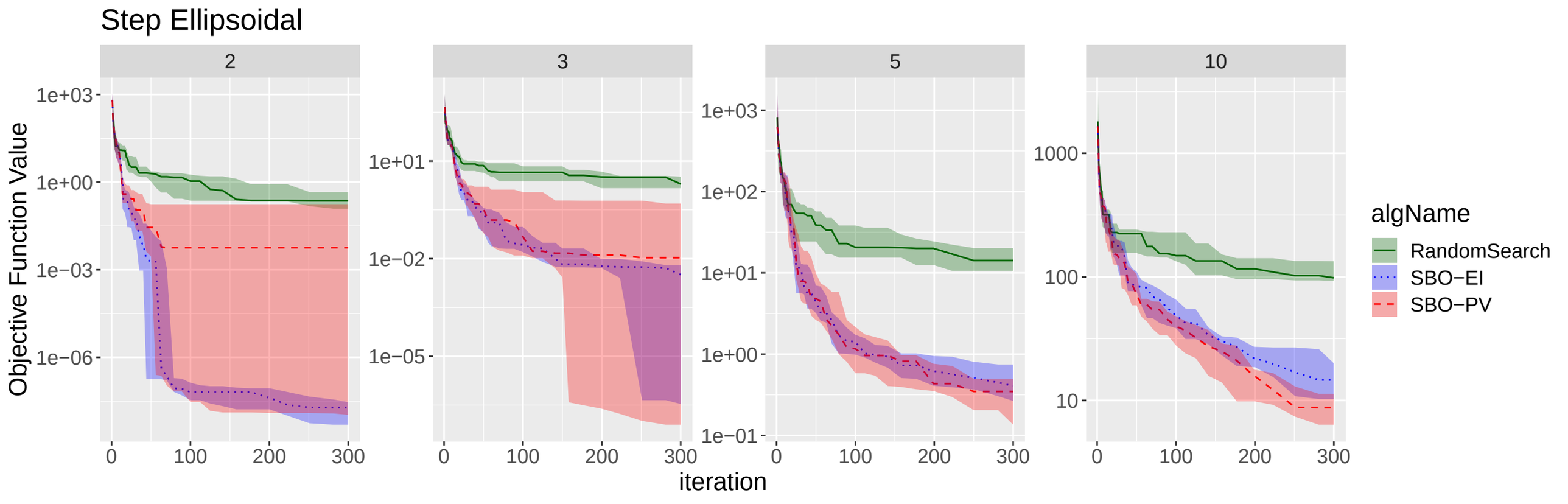

Ellipsoidal
2
3
5
10
Objective Function Value
1e+05
1e+02
1e−01
1e+07
1e+04
1e+01
1e+06
1e+02
1e+07
1e+06
1e+05
1e+04
1e+03
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

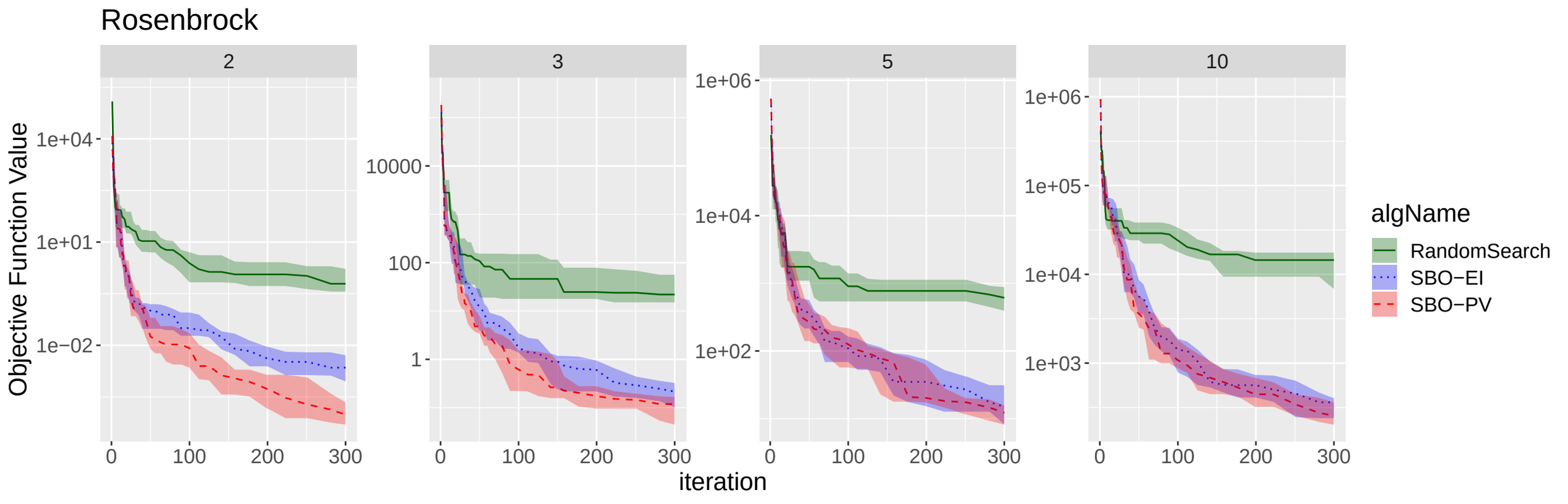

Rastrigin
2
3
5
10
Objective Function Value
1e+02
1e+01
1e+00
1e−01
1e−02
100.0
10.0
1.0
0.1
300
100
30
10
3
3000
1000
300
100
30
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

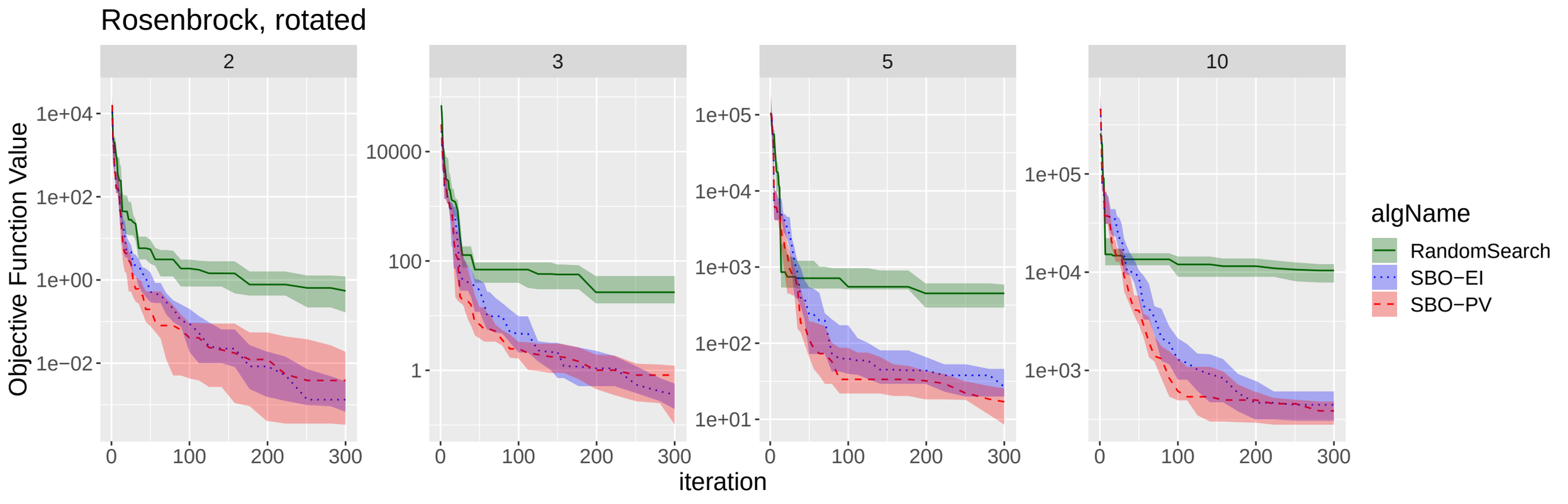

Büche−Rastrigin
2
3
5
10
Objective Function Value
1e+03
1e+01
1e−01
1000
100
10
1
10000
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

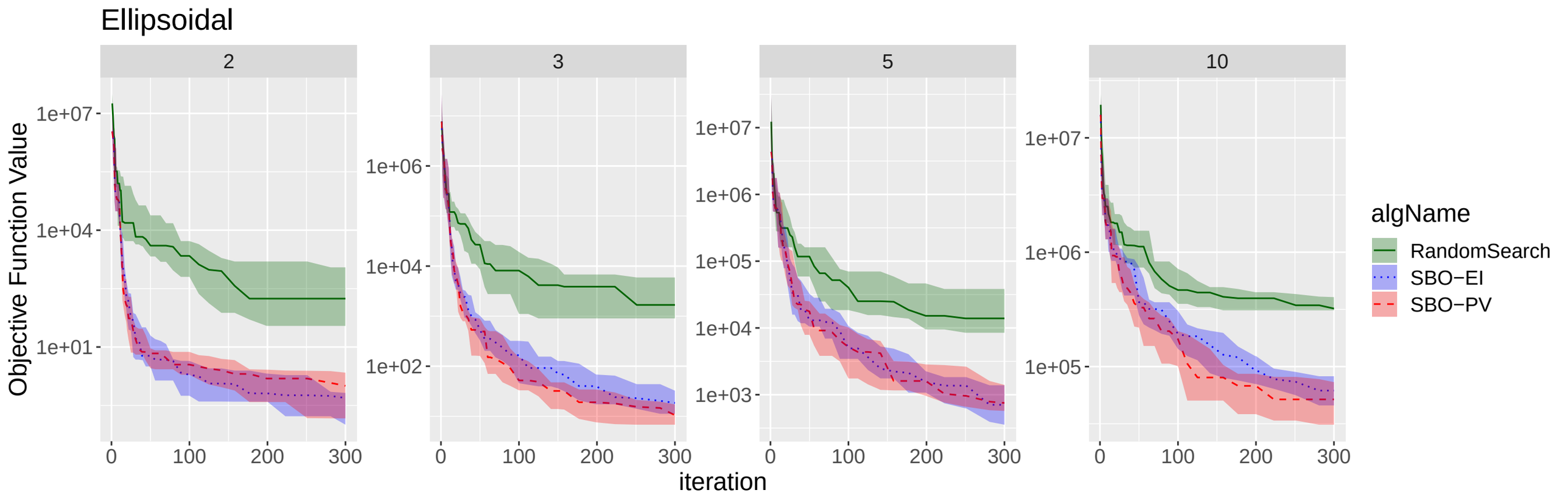

Linear Slope
2
3
5
10
Objective Function Value
1e+01
1e−01
1e−03
1e+02
1e+00
1e−02
100
10
1
30
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

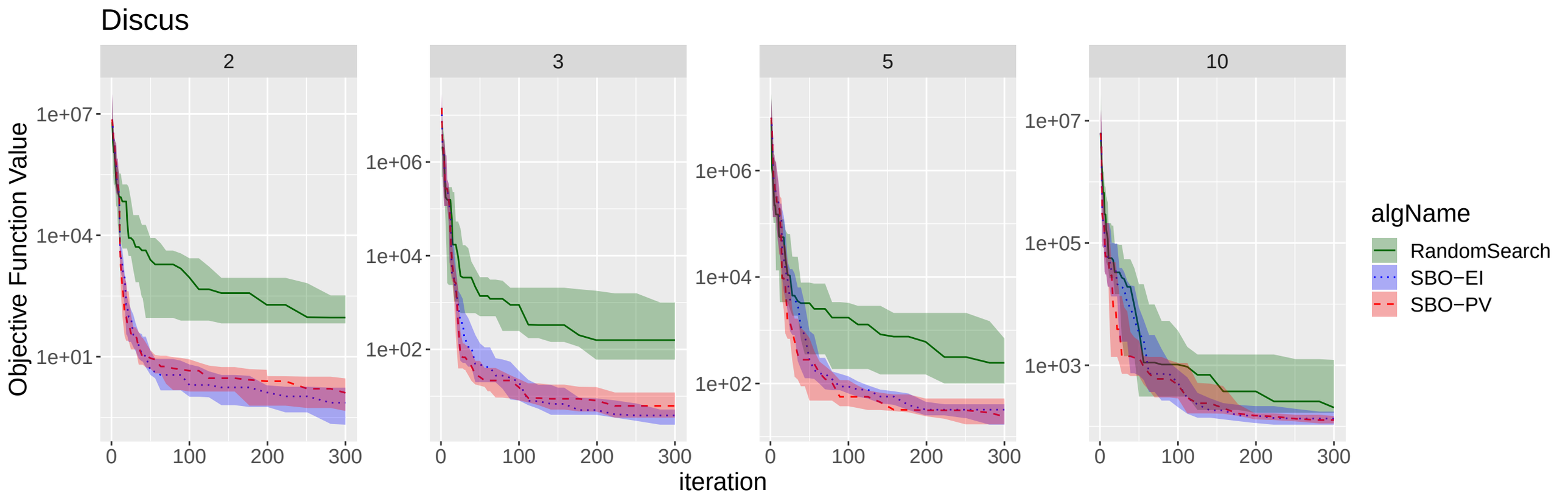

Attractive Sector
2
3
5
10
Objective Function Value
10000
100
1
1e+06
1e+05
1e+04
1e+03
1e+02
1e+01
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

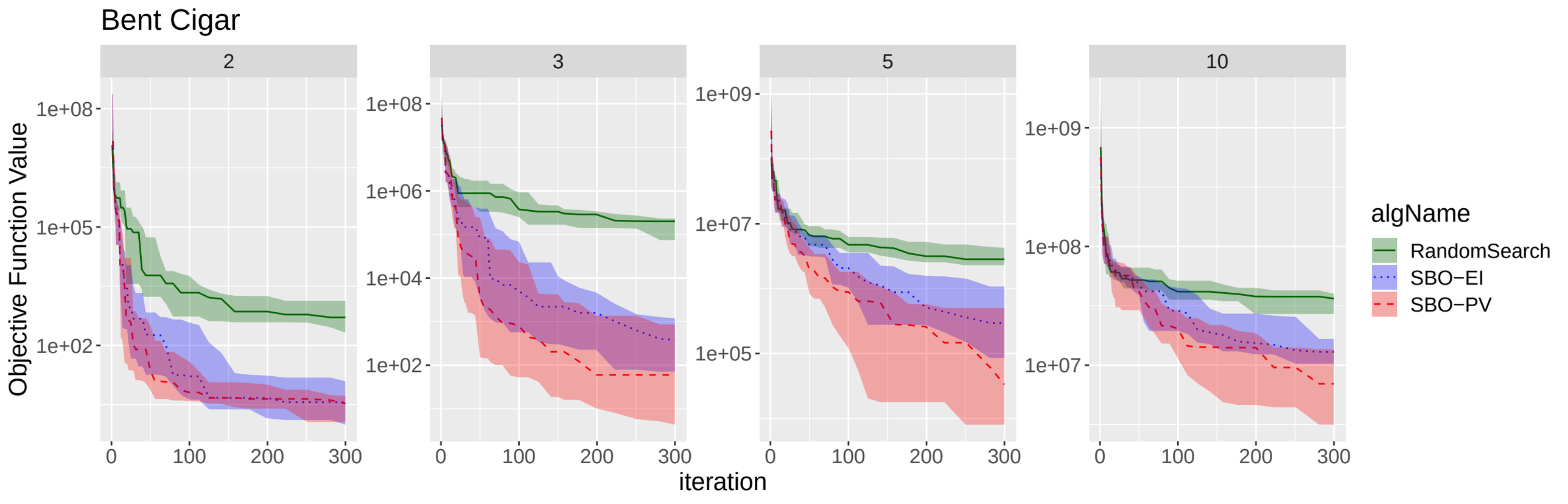

Step Ellipsoidal
2
3
5
10
Objective Function Value
1e+03
1e+00
1e−03
1e−06
1e+01
1e−02
1e−05
1e+02
1e−01
1000
100
10
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

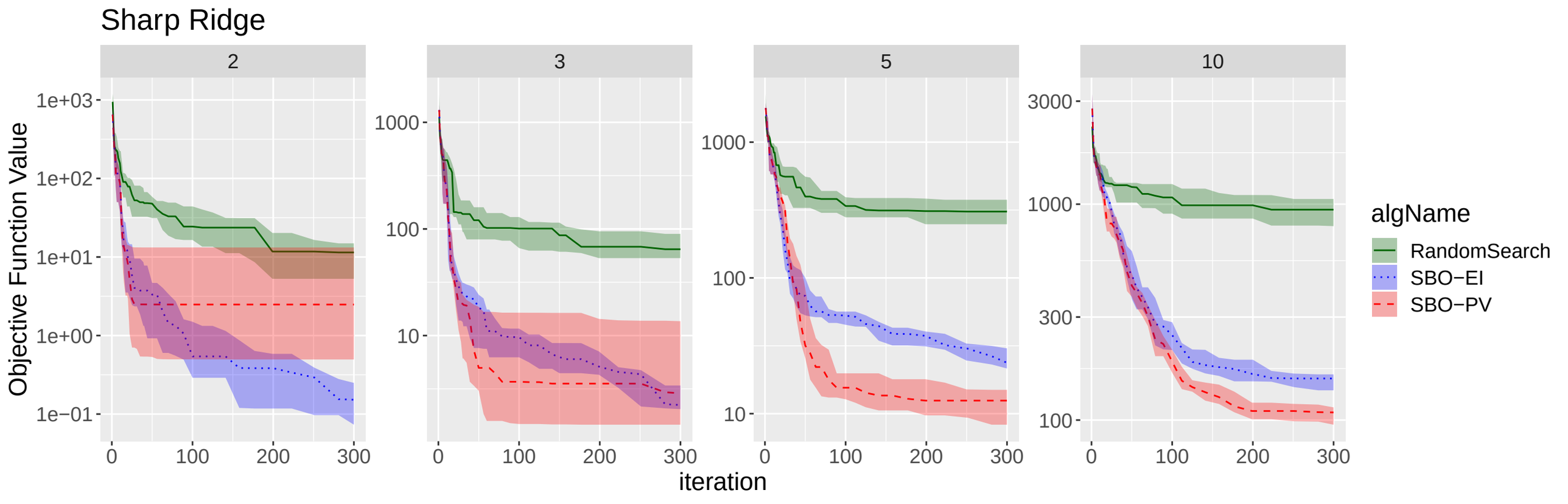

Rosenbrock
2
3
5
10
Objective Function Value
1e+04
1e+01
1e−02
10000
100
1
1e+06
1e+04
1e+02
1e+06
1e+05
1e+04
1e+03
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

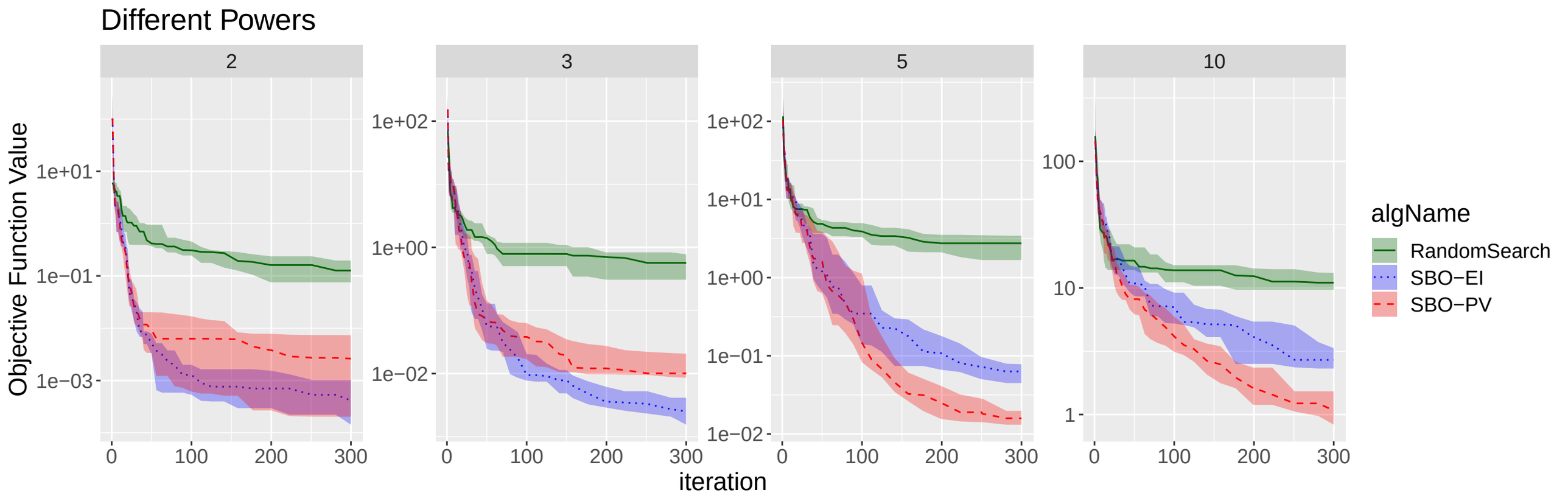

Rosenbrock, rotated
2
3
5
10
Objective Function Value
1e+04
1e+02
1e+00
1e−02
10000
100
1
1e+05
1e+04
1e+03
1e+02
1e+01
1e+05
1e+04
1e+03
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

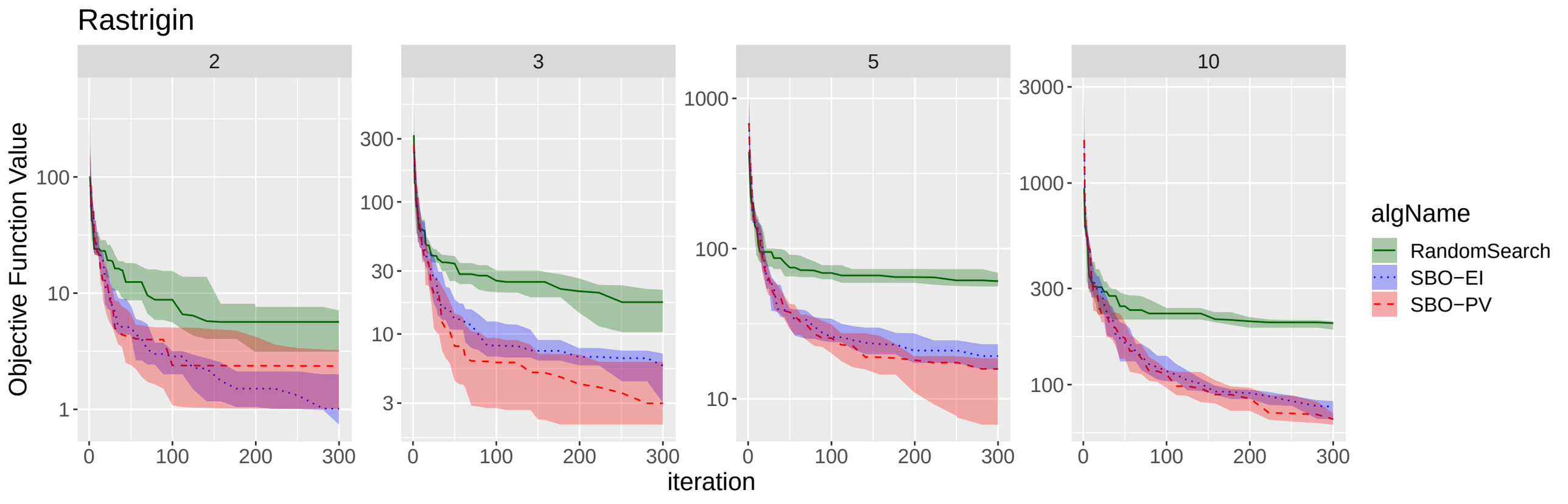

Ellipsoidal
2
3
5
10
Objective Function Value
1e+07
1e+04
1e+01
1e+06
1e+02
1e+05
1e+03
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

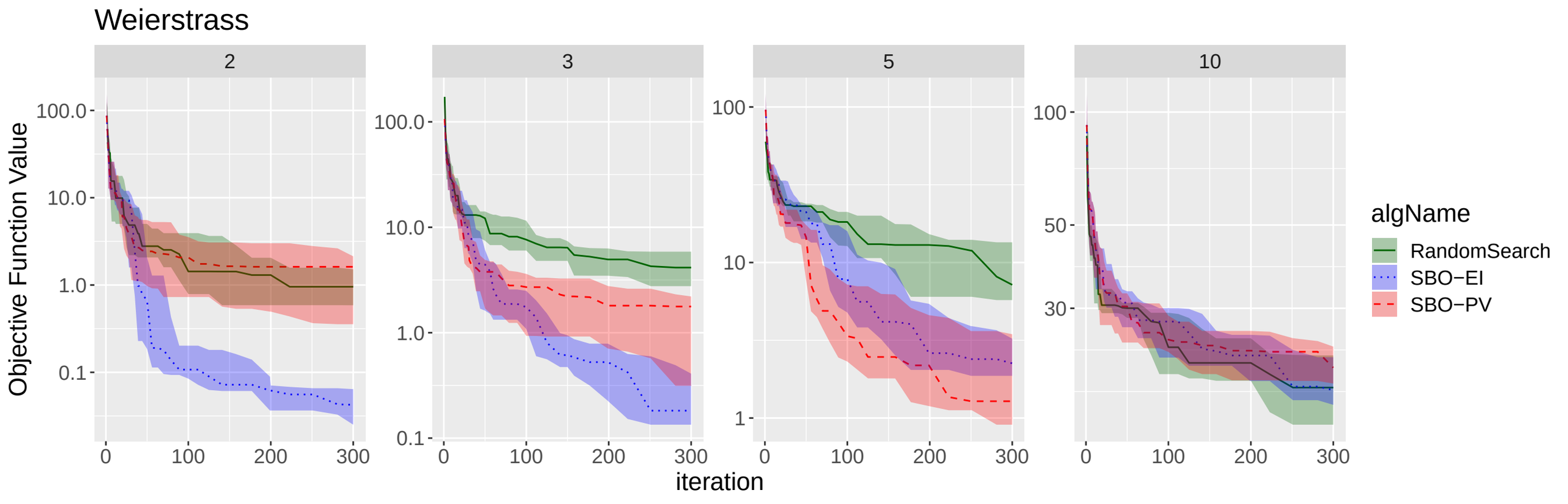

Discus
2
3
5
10
Objective Function Value
1e+07
1e+04
1e+01
1e+06
1e+02
1e+05
1e+03
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

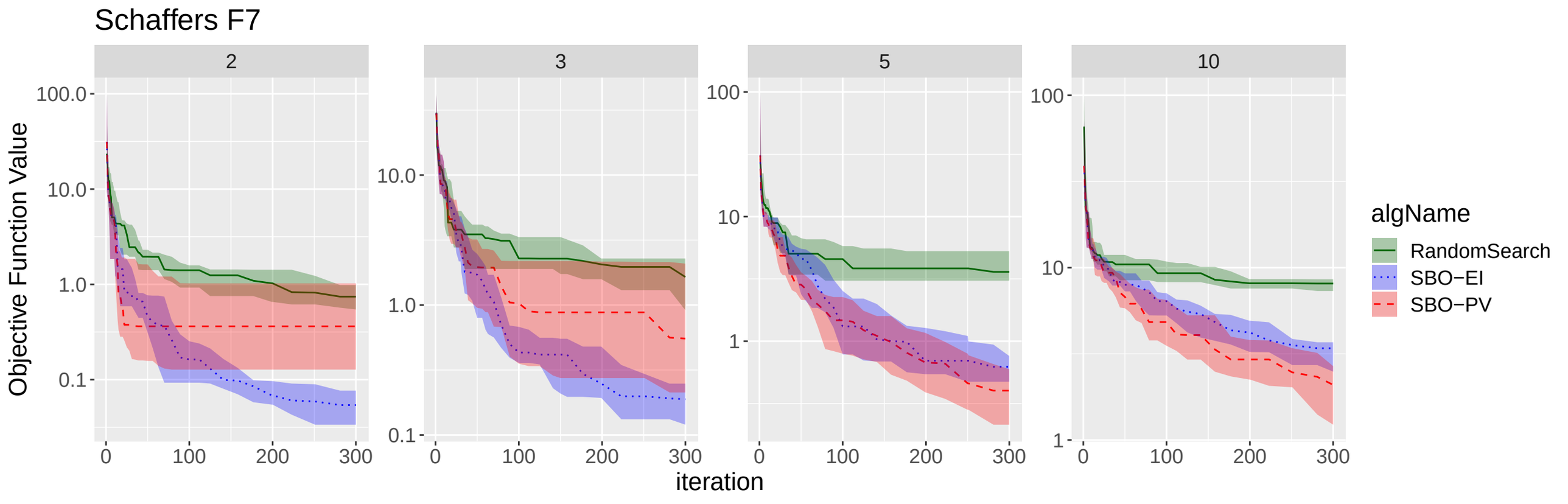

Bent Cigar
2
3
5
10
Objective Function Value
1e+08
1e+05
1e+02
1e+09
1e+07
1e+06
1e+04
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

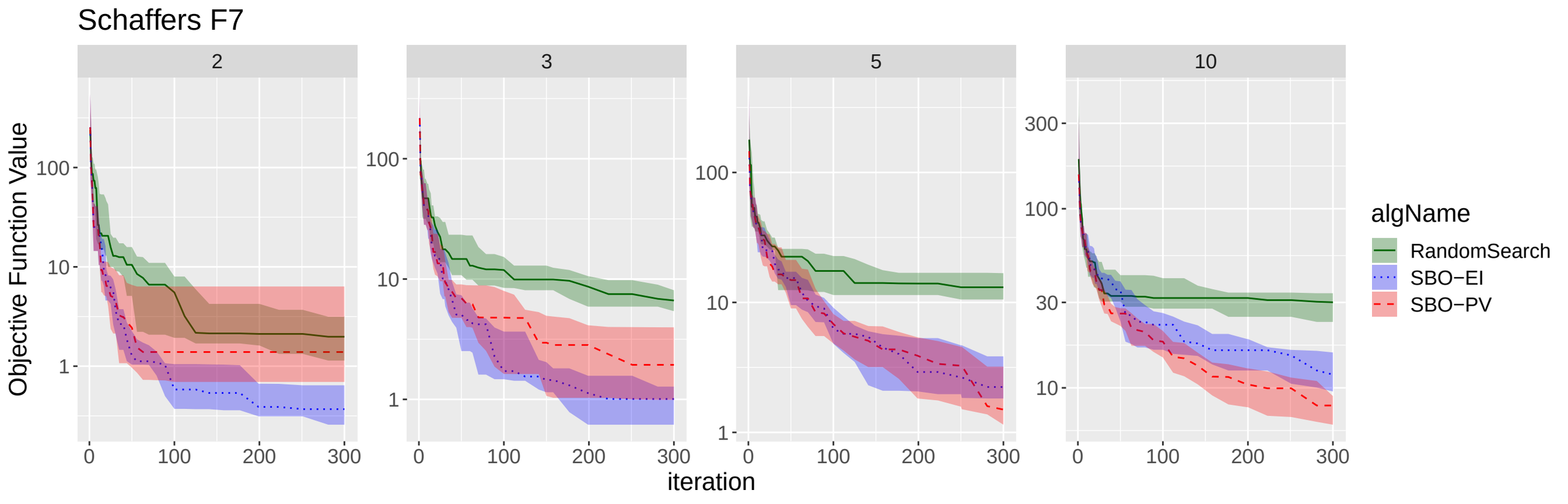

Sharp Ridge
2
3
5
10
Objective Function Value
1e+03
1e+02
1e+01
1e+00
1e−01
1000
100
10
3000
300
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

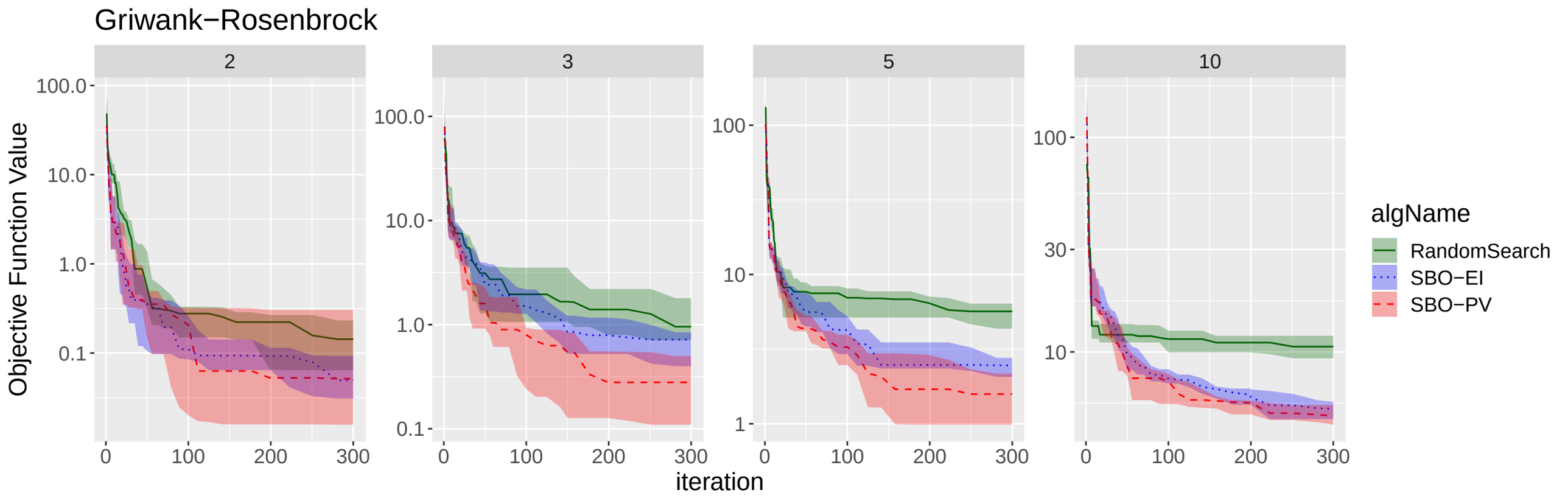

Different Powers
2
3
5
10
Objective Function Value
1e+01
1e−01
1e−03
1e+02
1e+00
1e−02
100
10
1
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

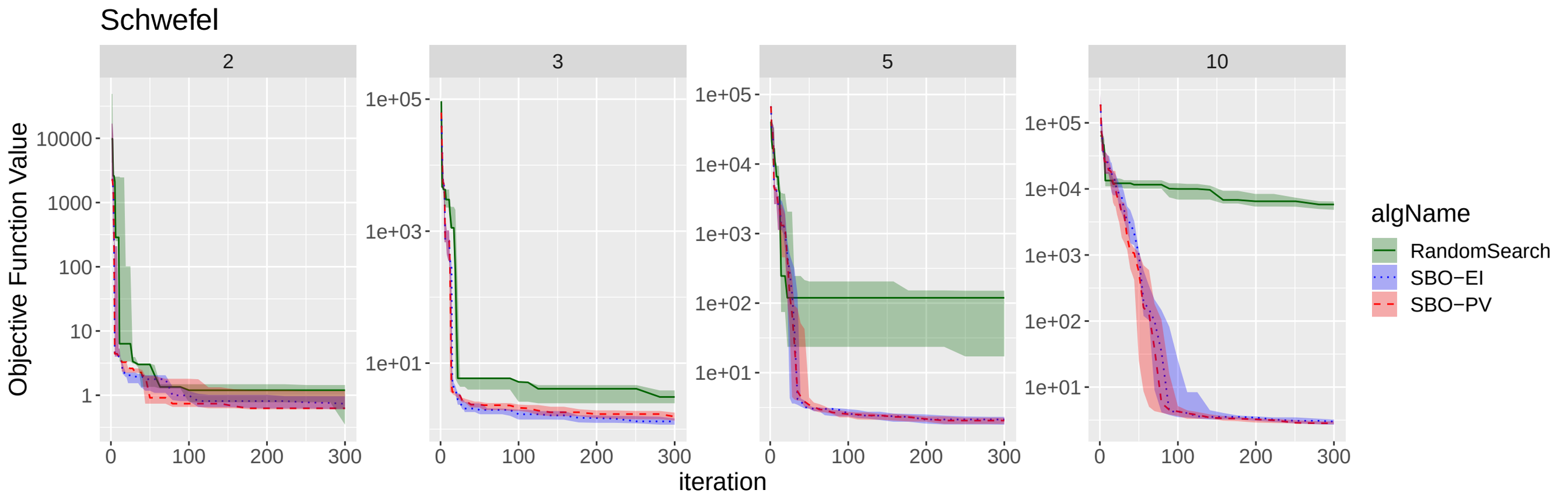

Rastrigin
2
3
5
10
Objective Function Value
iteration
algName
RandomSearch
SBO−EI
SBO−PV

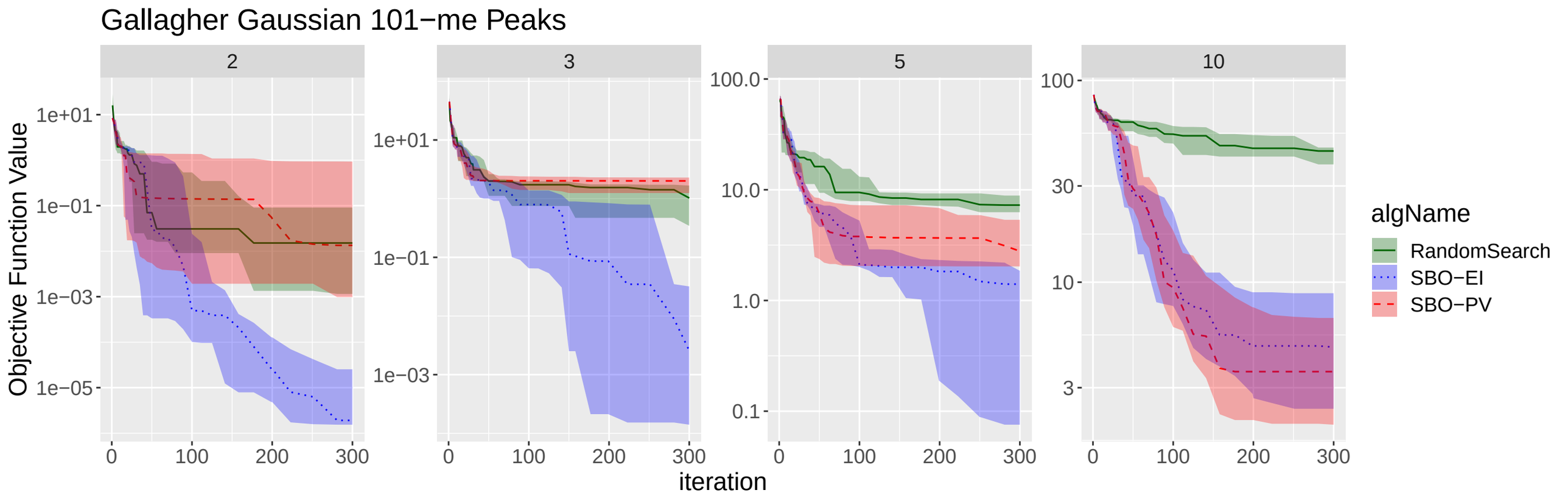

Weierstrass
2
3
5
10
Objective Function Value
100.0
10.0
1.0
0.1
100
10
1
50
30
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV

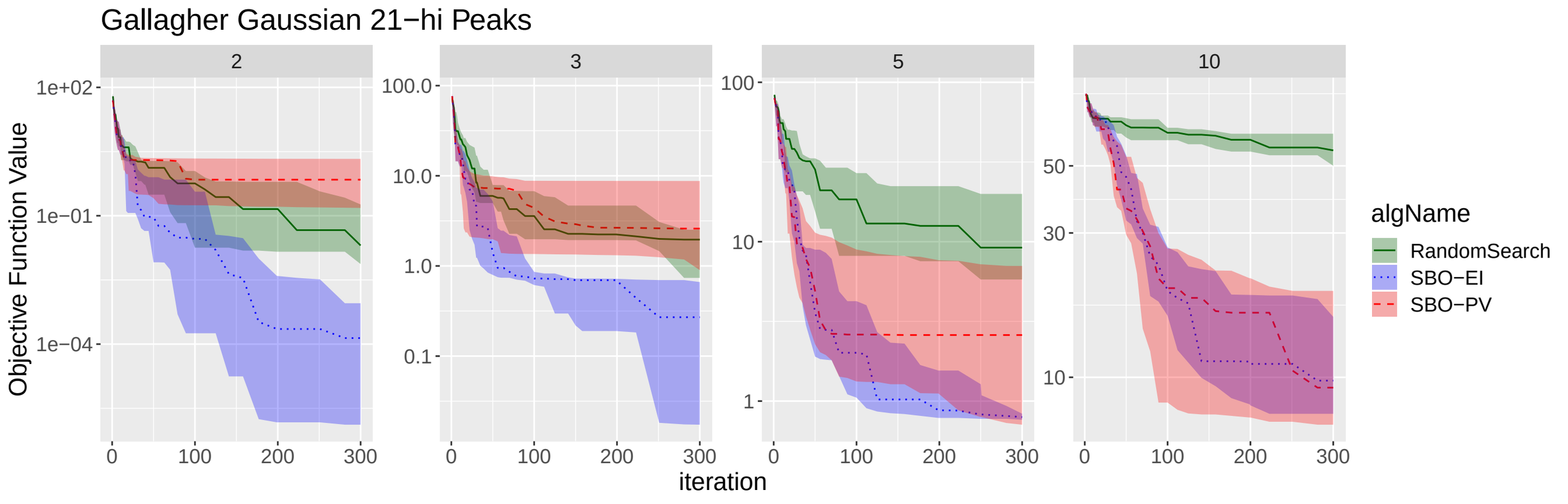

Schaffers F7
2
3
5
10
Objective Function Value
iteration
100.0
10.0
1.0
0.1
100
10
1
0
100
200
300
algName
RandomSearch
SBO−EI
SBO−PV

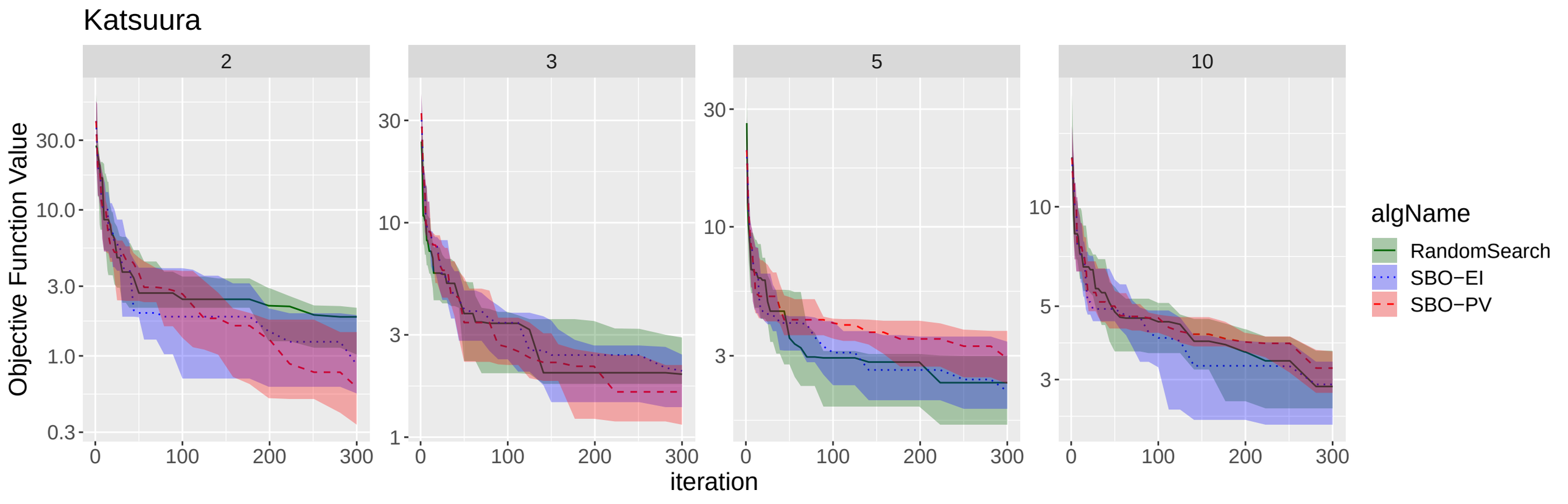

Schaffers F7
2
3
5
10
Objective Function Value
iteration
100
10
1
300
30
0
100
200
300
algName
RandomSearch
SBO−EI
SBO−PV

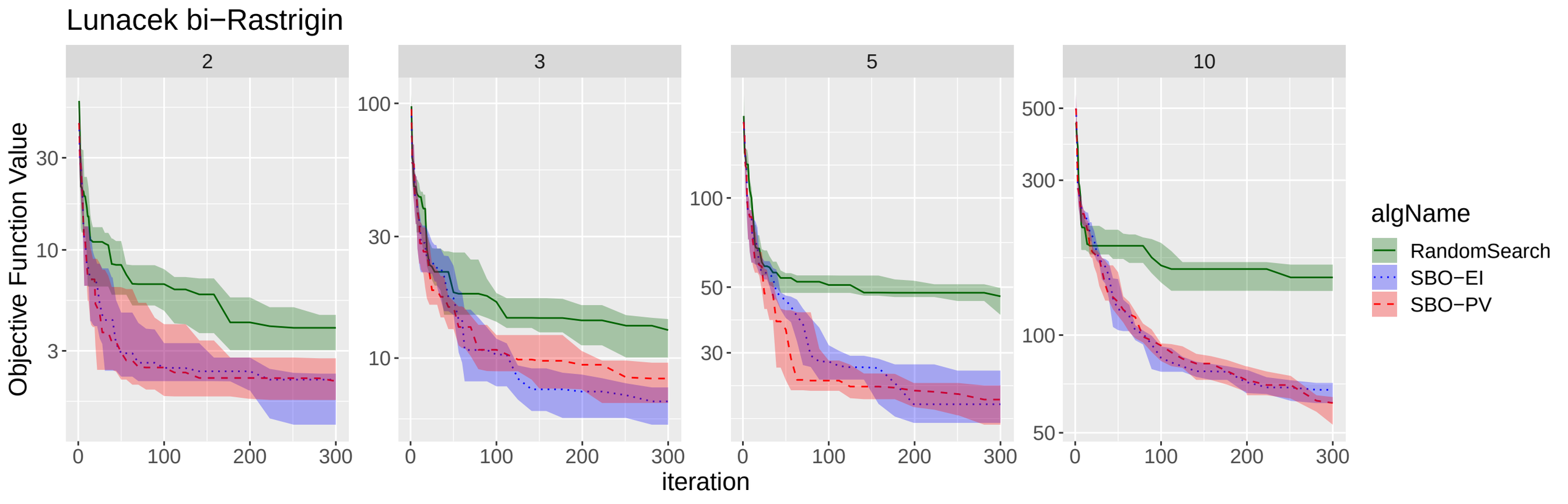

Griwank−Rosenbrock
2
3
5
10
Objective Function Value
iteration
100.0
10.0
1.0
0.1
100
10
1
30
0
100
200
300
algName
RandomSearch
SBO−EI
SBO−PV


Schwefel
2
3
5
10
Objective Function Value
10000
1000
100
10
1
1e+05
1e+03
1e+01
1e+04
1e+02
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV


Gallagher Gaussian 101−me Peaks
2
3
5
10
Objective Function Value
1e+01
1e−01
1e−03
1e−05
100.0
10.0
1.0
0.1
100
30
10
3
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV


Gallagher Gaussian 21−hi Peaks
2
3
5
10
Objective Function Value
1e+02
1e−01
1e−04
100.0
10.0
1.0
0.1
100
10
1
50
30
10
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV


Katsuura
2
3
5
10
Objective Function Value
30.0
10.0
3.0
1.0
0.3
30
10
3
1
0
100
200
300
iteration
algName
RandomSearch
SBO−EI
SBO−PV


Lunacek bi−Rastrigin
2
3
5
10
Objective Function Value
iteration
algName
RandomSearch
SBO−EI
SBO−PV