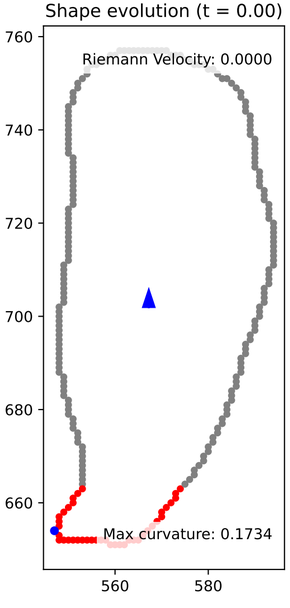
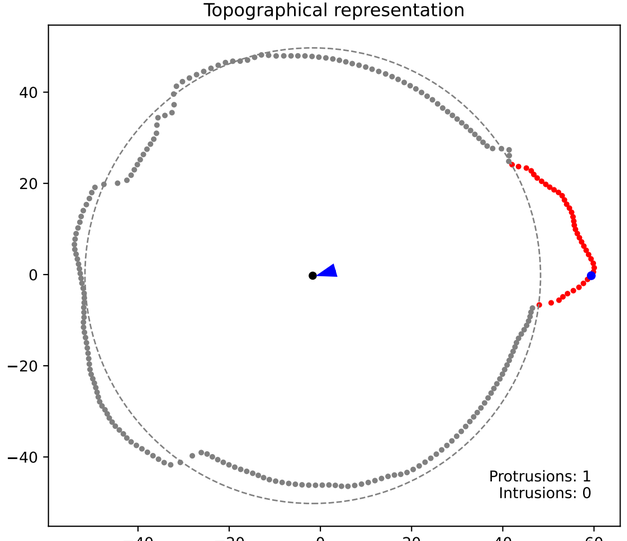
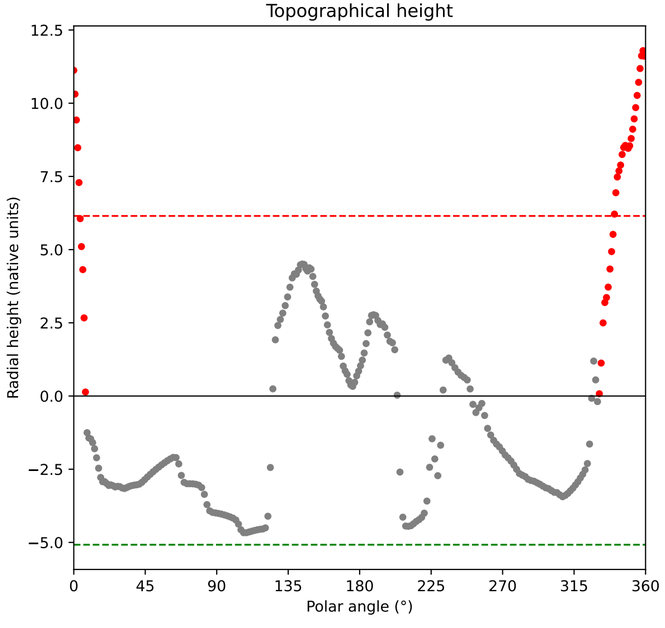
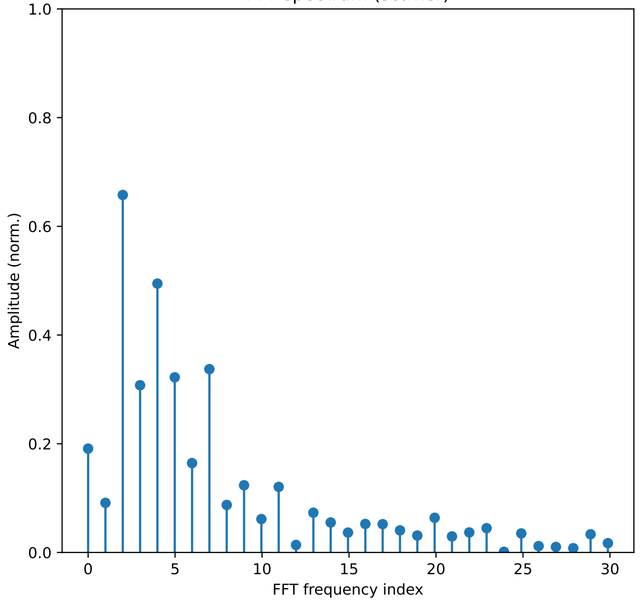
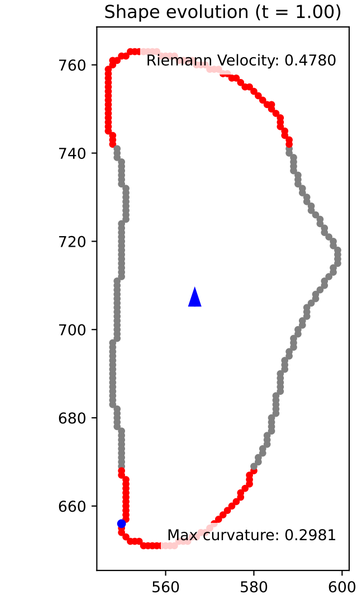
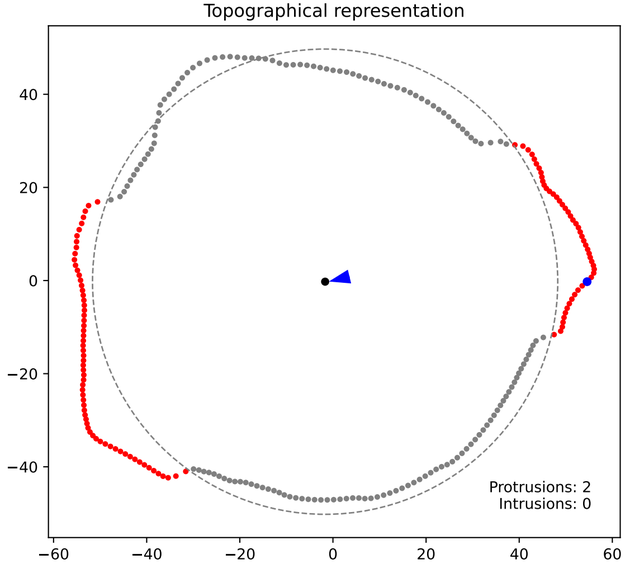

Shape evolution (t = 0.00)
Riemann Velocity: 0.0000
Max curvature: 0.1734
760
740
720
700
680
660
560
580

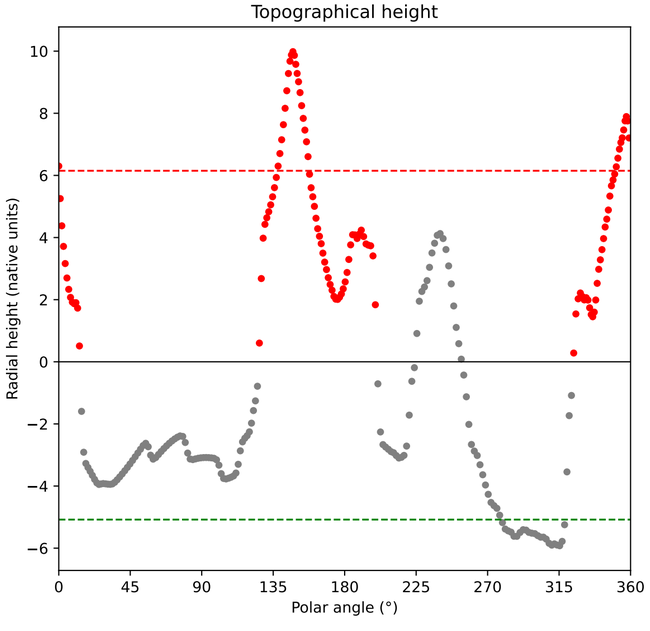

Topographical representation
Protrusions: 1
Intrusions: 0
40
20
0
−20
−40
−40
−20
0
20
40
60

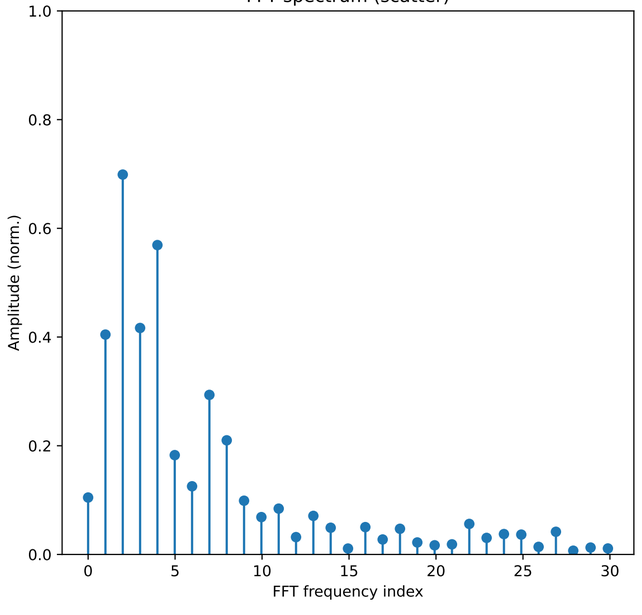

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
0
45
90
135
180
225
270
315
360

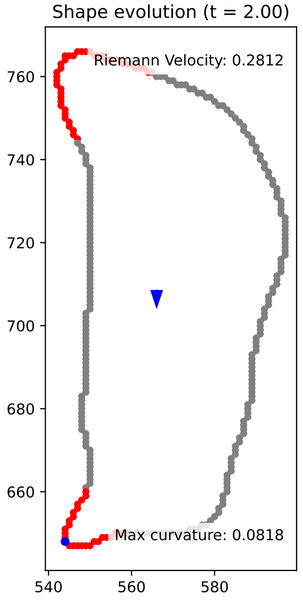

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

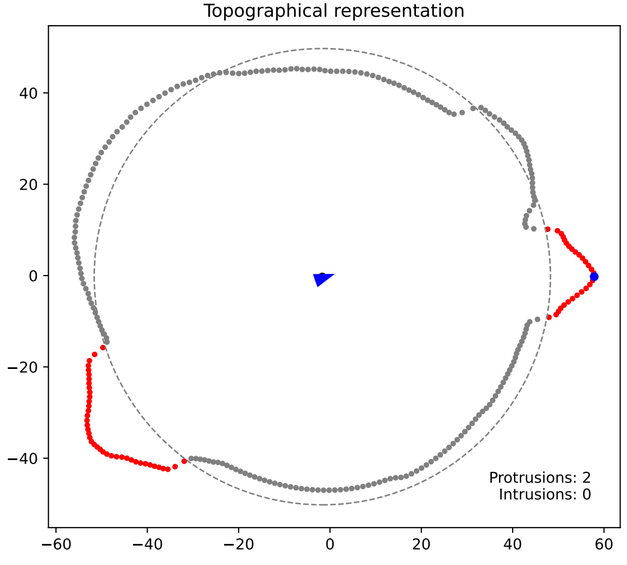

Shape evolution (t = 1.00)
Riemann Velocity: 0.4780
Max curvature: 0.2981
760
740
720
700
680
660
560
580
600

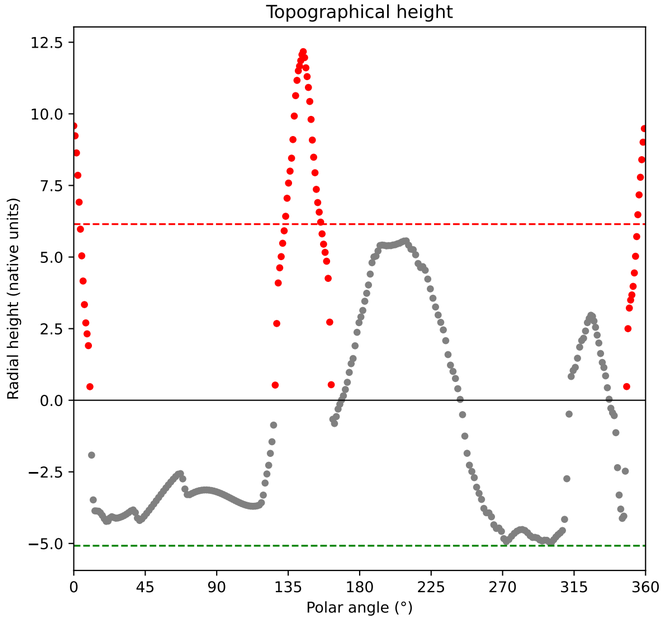

Topographical representation
Protrusions: 2
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

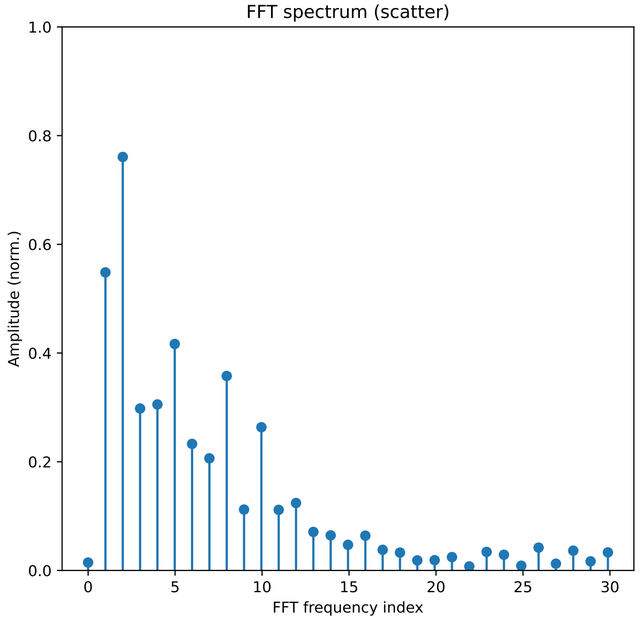

Topographical height
Radial height (native units)
Polar angle (°)
10
8
6
4
2
0
−2
−4
−6
0
45
90
135
180
225
270
315
360

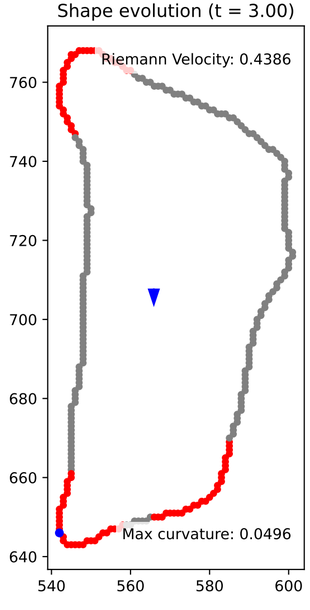

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

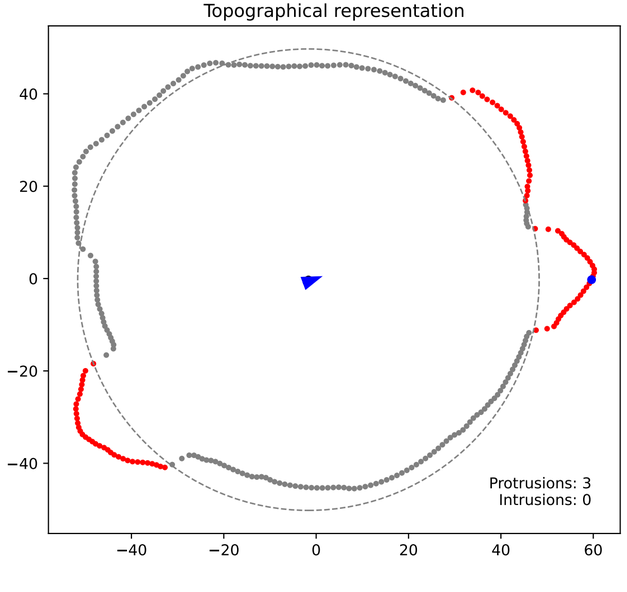

Shape evolution (t = 2.00)
Riemann Velocity: 0.2812
Max curvature: 0.0818
760
740
720
700
680
660
540
560
580

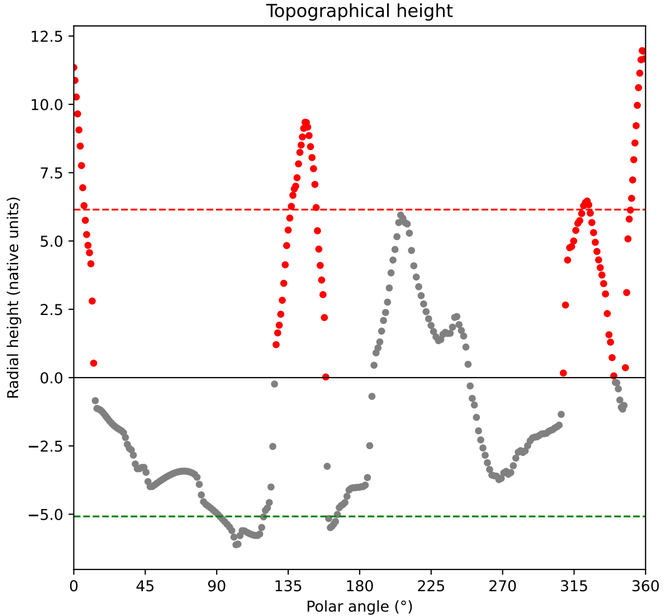

Topographical representation
Protrusions: 2
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

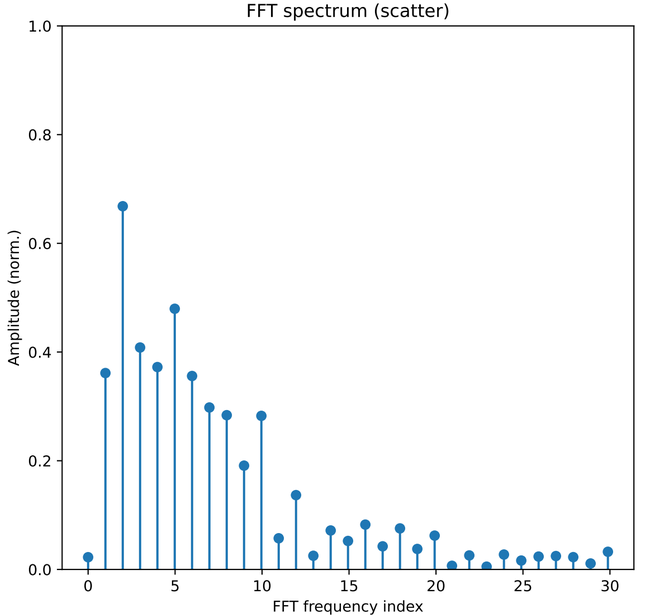

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
0
45
90
135
180
225
270
315
360

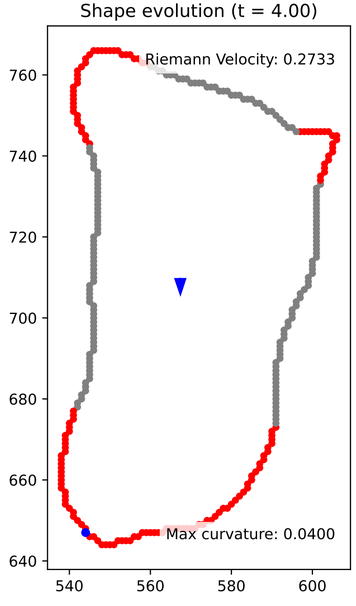

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

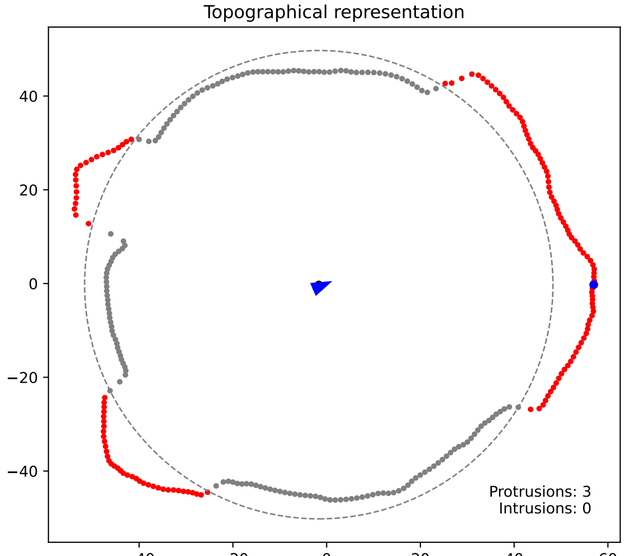

Shape evolution (t = 3.00)
Riemann Velocity: 0.4386
Max curvature: 0.0496
760
740
720
700
680
660
640
540
560
580
600

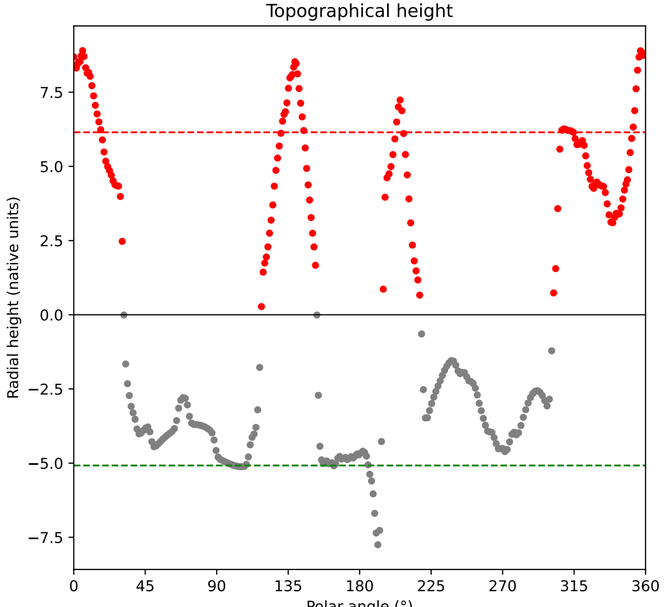

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−40
−20
0
20
40
60

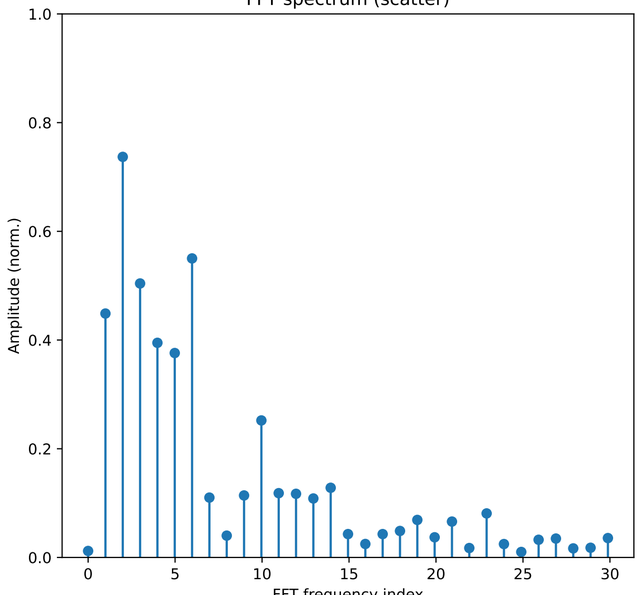

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
0
45
90
135
180
225
270
315
360

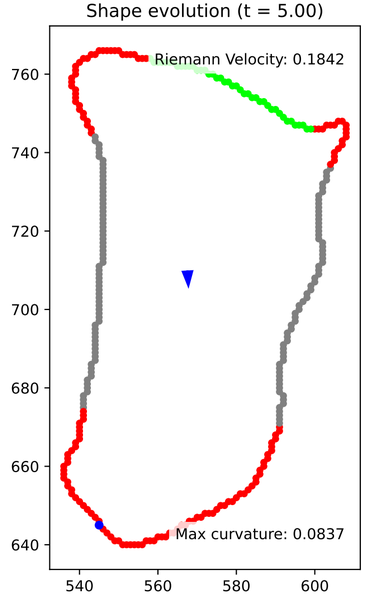

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

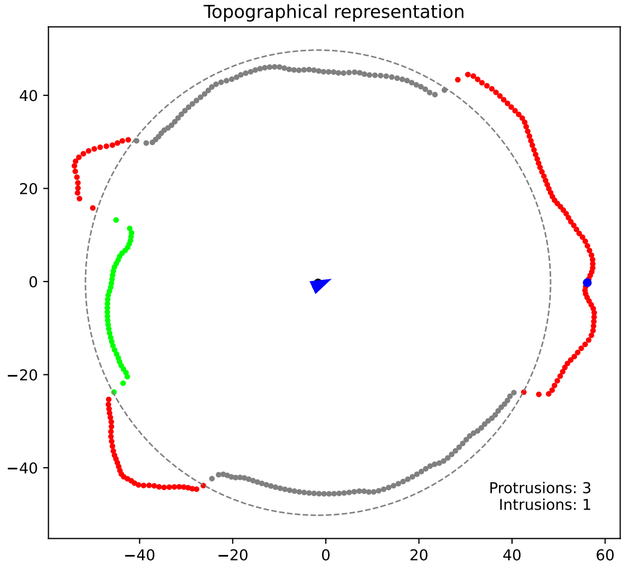

Shape evolution (t = 4.00)
Riemann Velocity: 0.2733
Max curvature: 0.0400
760
740
720
700
680
660
640
540
560
580
600

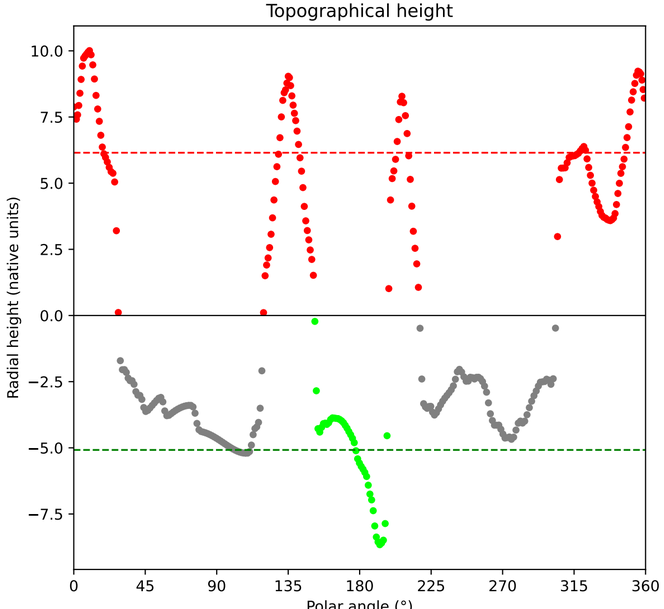

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−40
−20
0
20
40
60

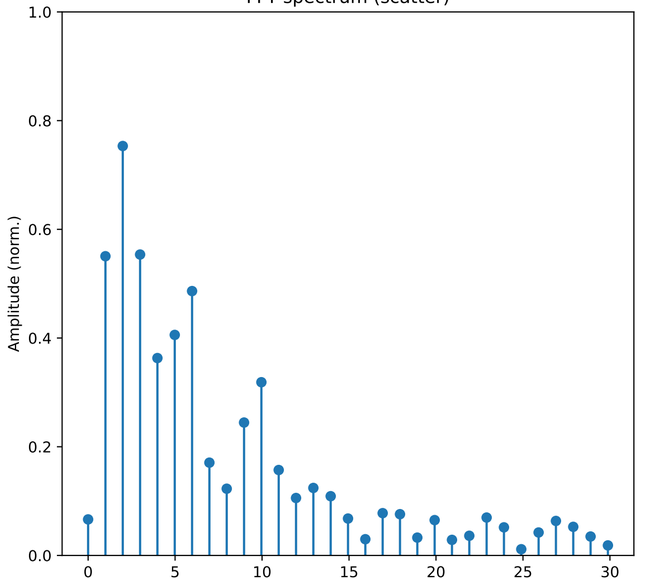

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

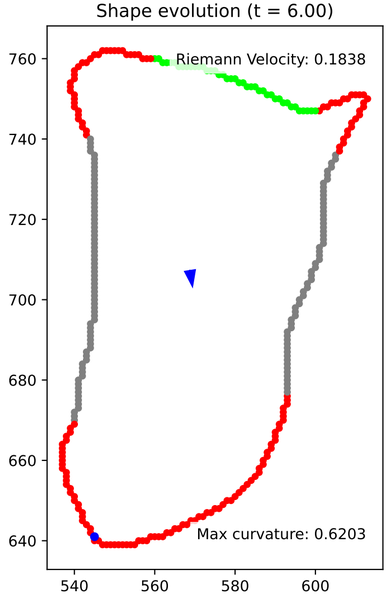

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

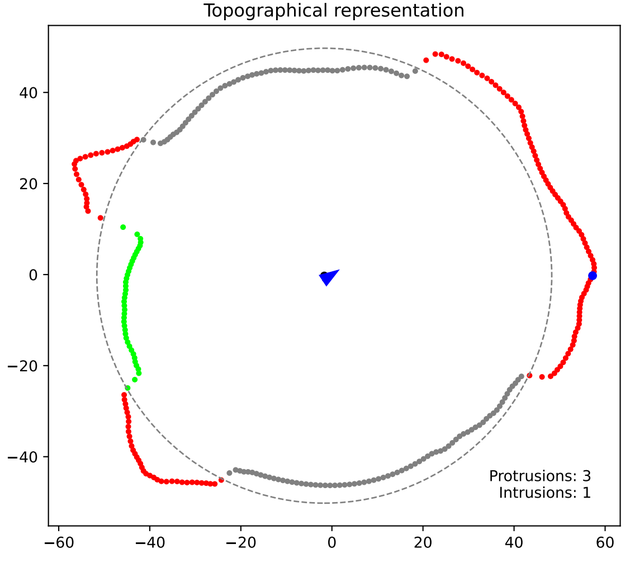

Shape evolution (t = 5.00)
Riemann Velocity: 0.1842
Max curvature: 0.0837
760
740
720
700
680
660
640
540
560
580
600

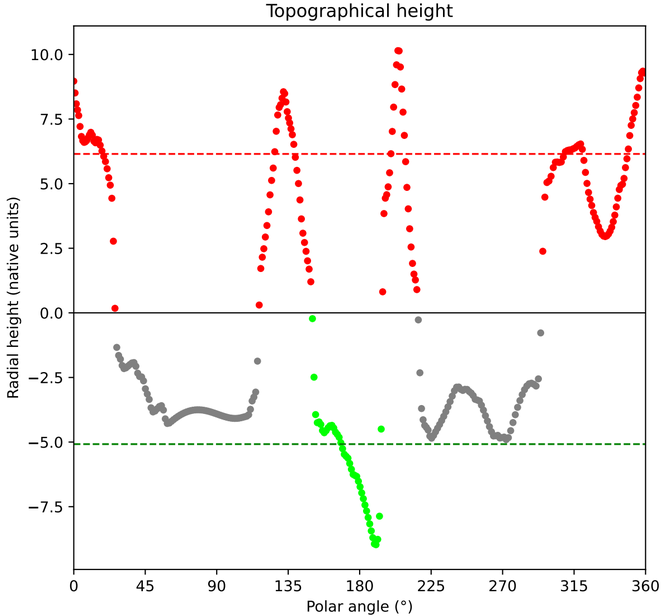

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−40
−20
0
20
40
60

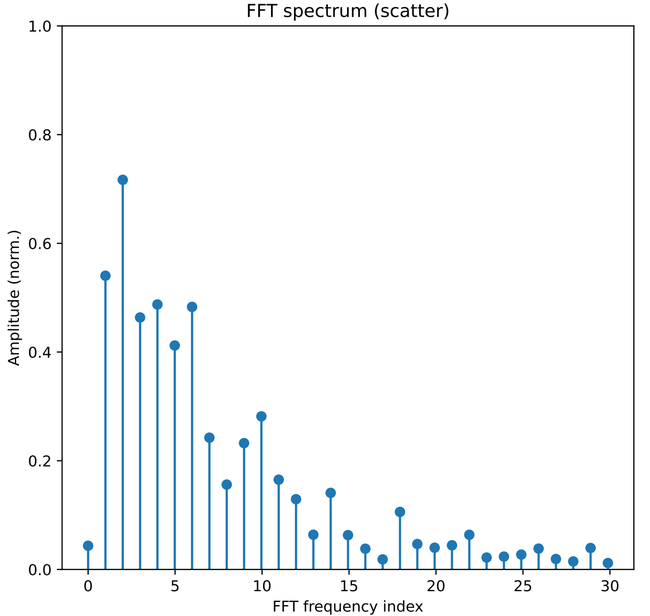

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

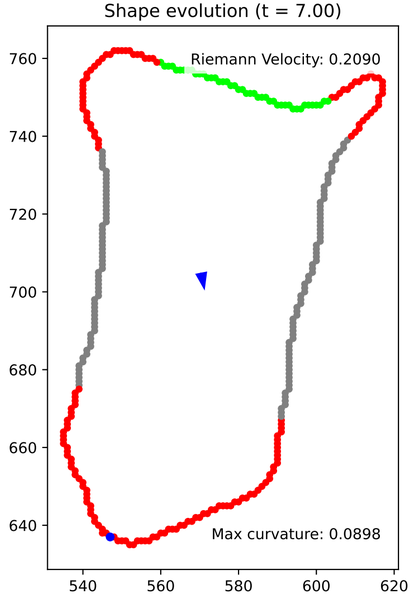

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

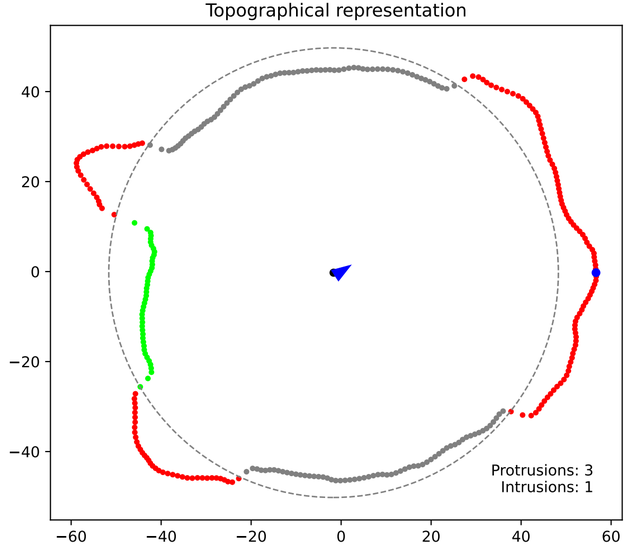

Shape evolution (t = 6.00)
Riemann Velocity: 0.1838
Max curvature: 0.6203
760
740
720
700
680
660
640
540
560
580
600

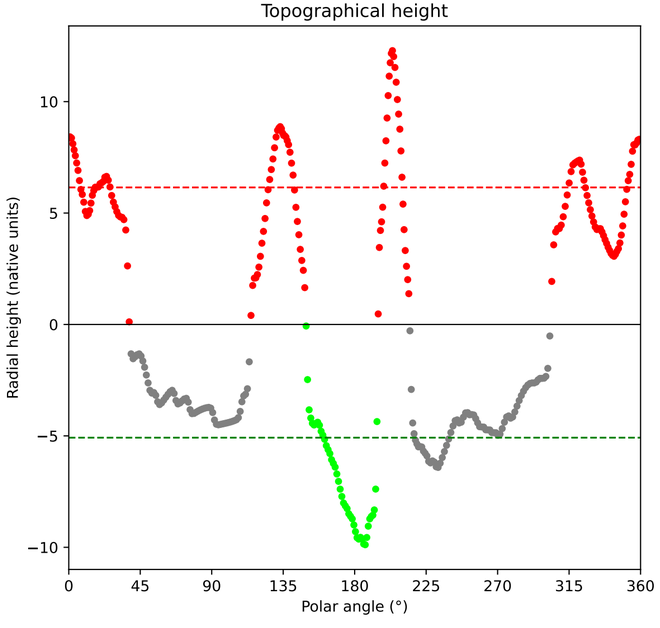

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

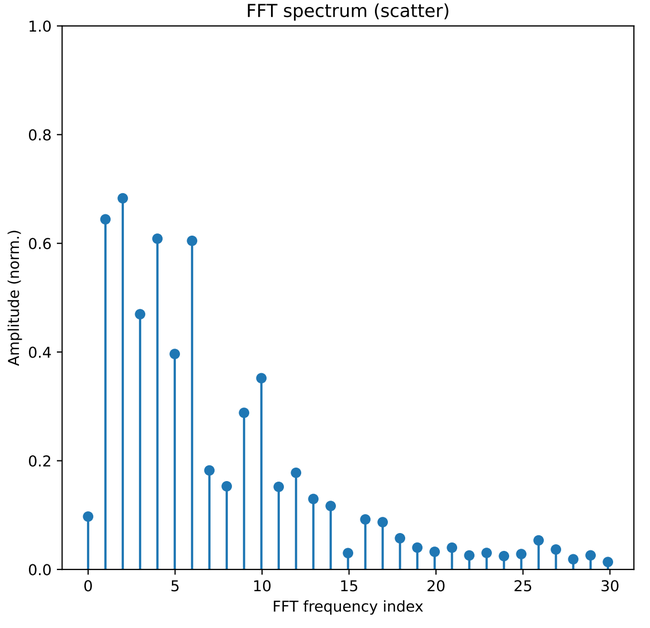

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

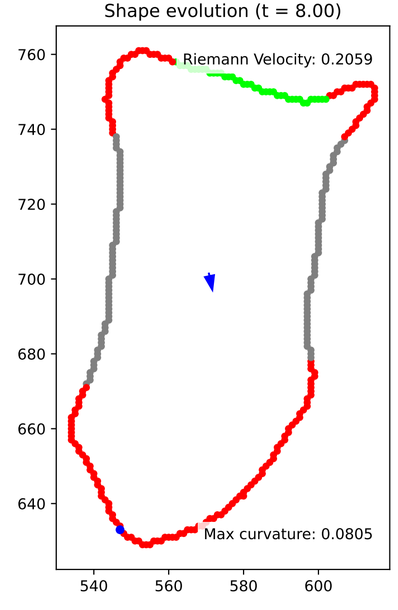

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

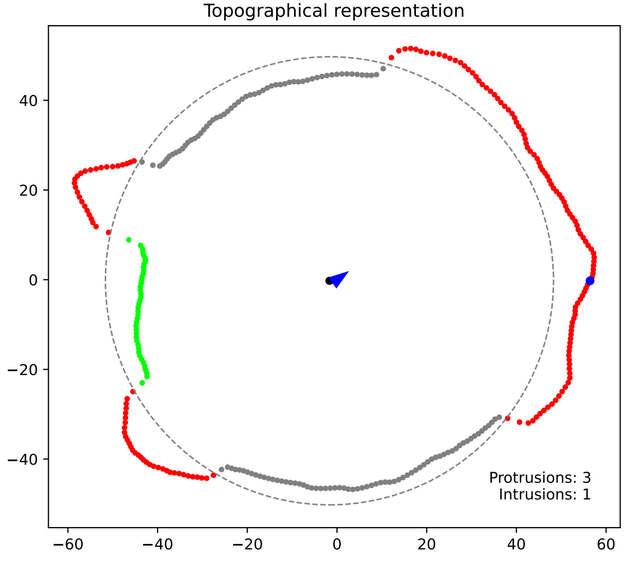

Shape evolution (t = 7.00)
Riemann Velocity: 0.2090
Max curvature: 0.0898
760
740
720
700
680
660
640
540
560
580
600
620

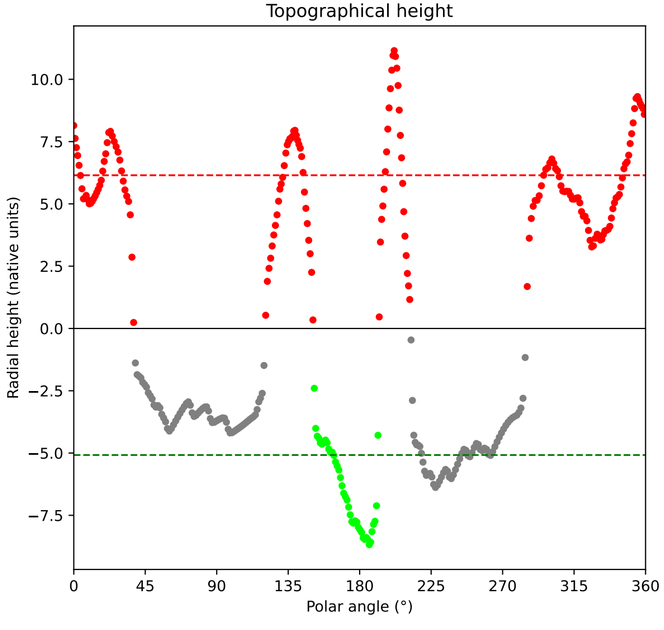

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

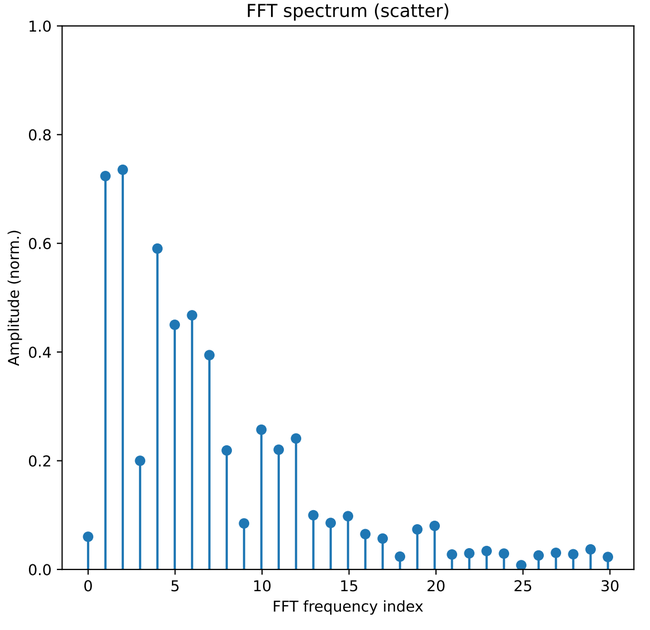

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
−10
0
45
90
135
180
225
270
315
360

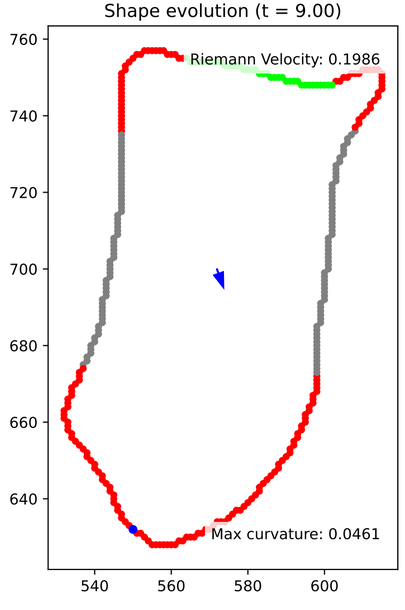

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

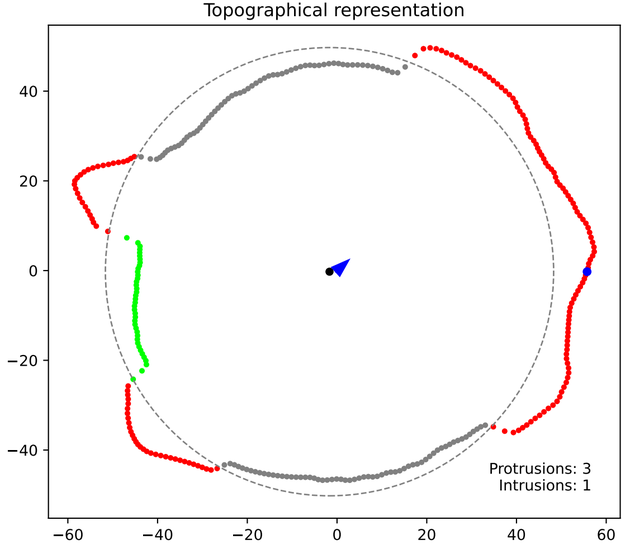

Shape evolution (t = 8.00)
Riemann Velocity: 0.2059
Max curvature: 0.0805
760
740
720
700
680
660
640
540
560
580
600

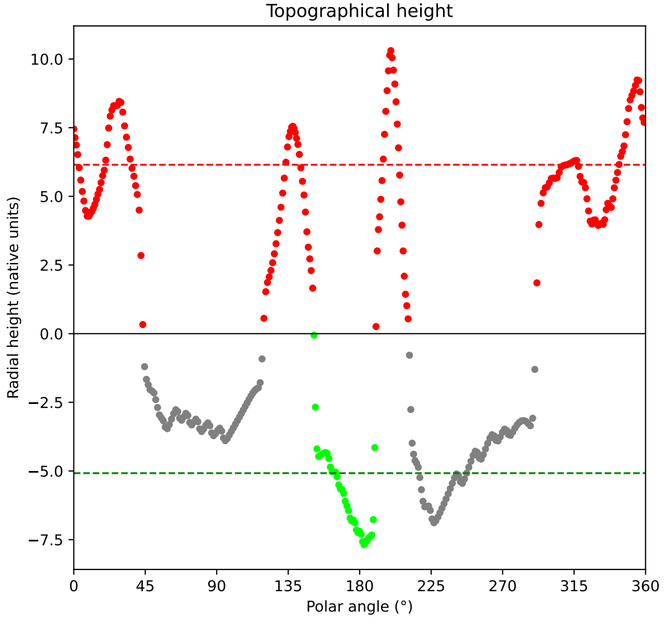

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

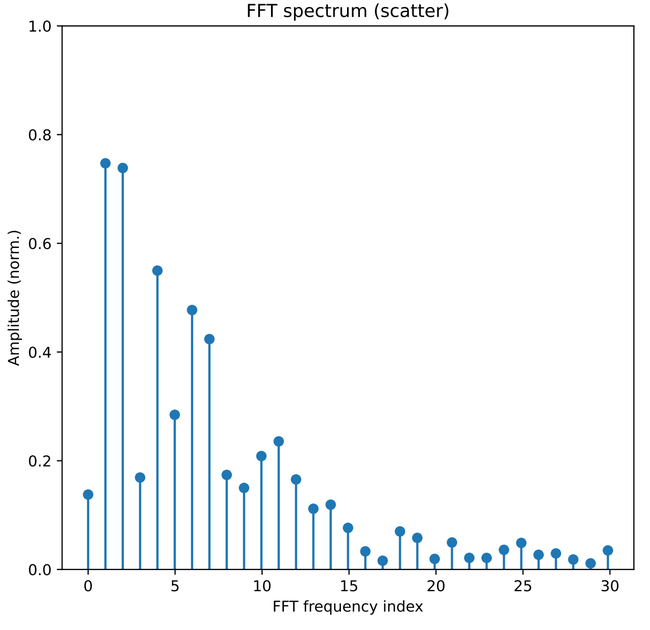

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

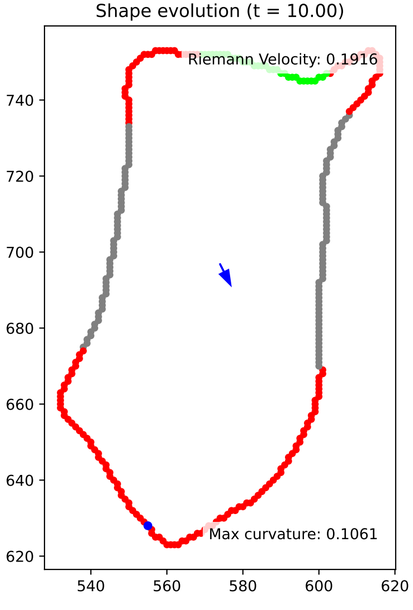

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

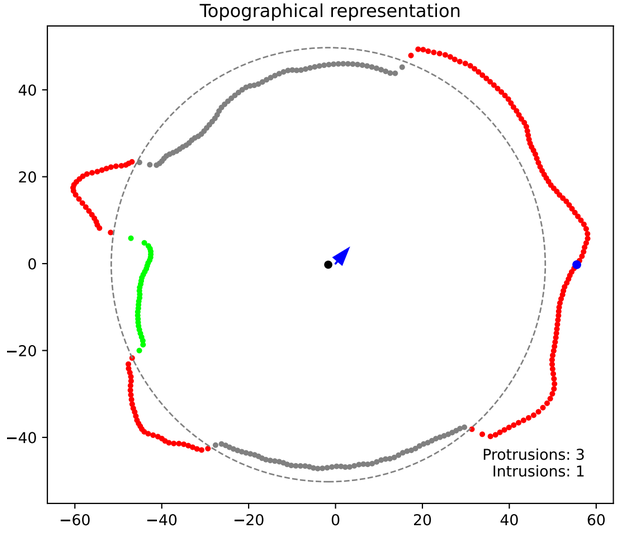

Shape evolution (t = 9.00)
Riemann Velocity: 0.1986
Max curvature: 0.0461
760
740
720
700
680
660
640
540
560
580
600

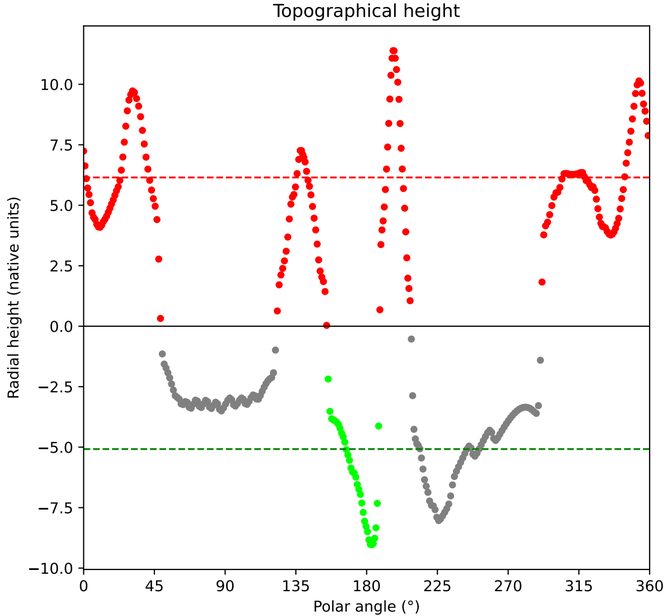

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

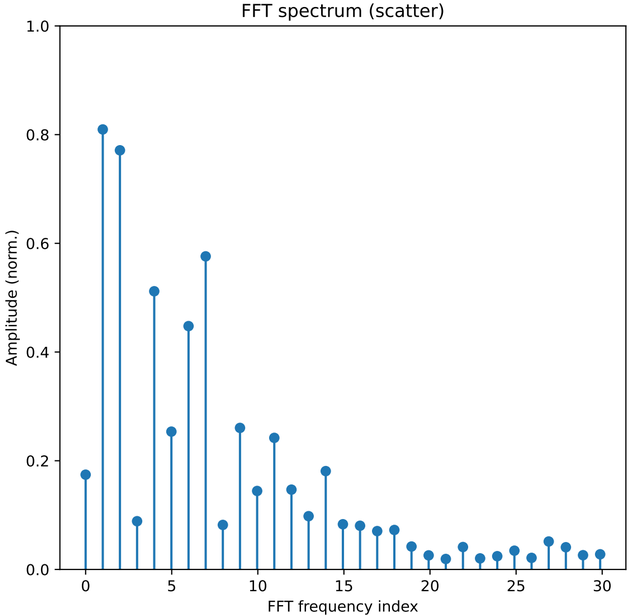

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

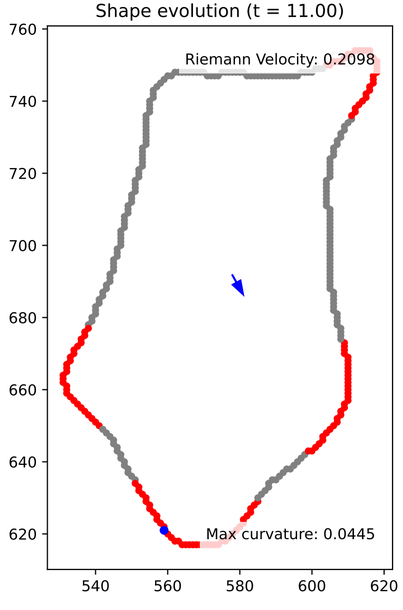

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

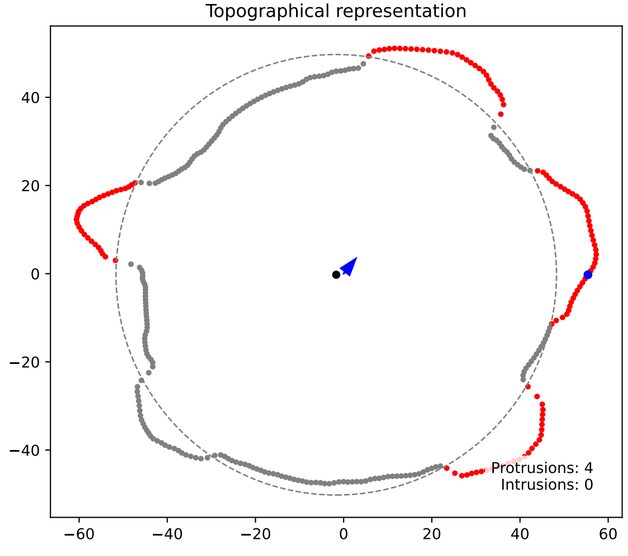

Shape evolution (t = 10.00)
Riemann Velocity: 0.1916
Max curvature: 0.1061
740
720
700
680
660
640
620
540
560
580
600
620

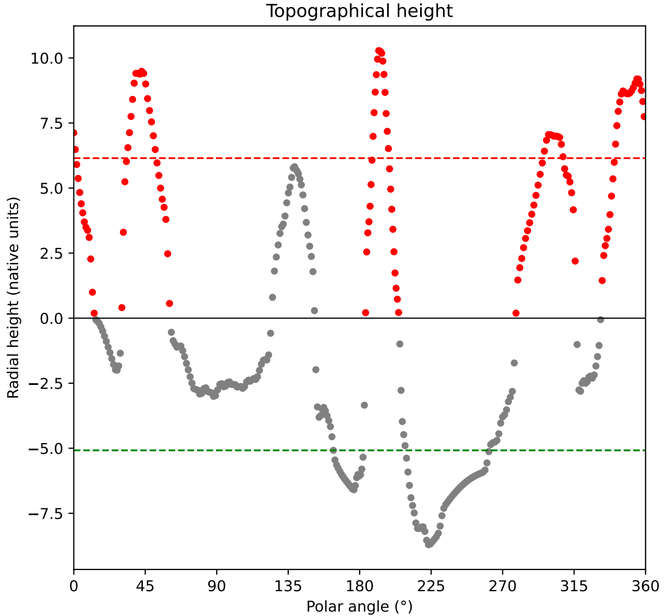

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

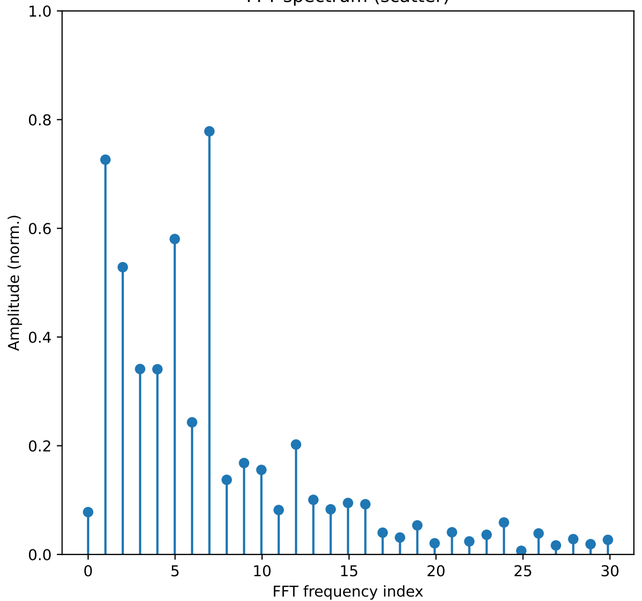

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

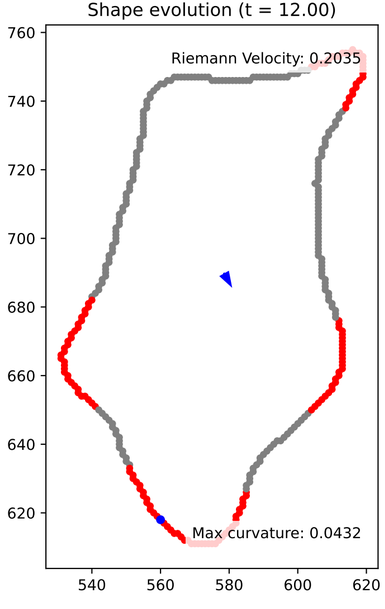

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

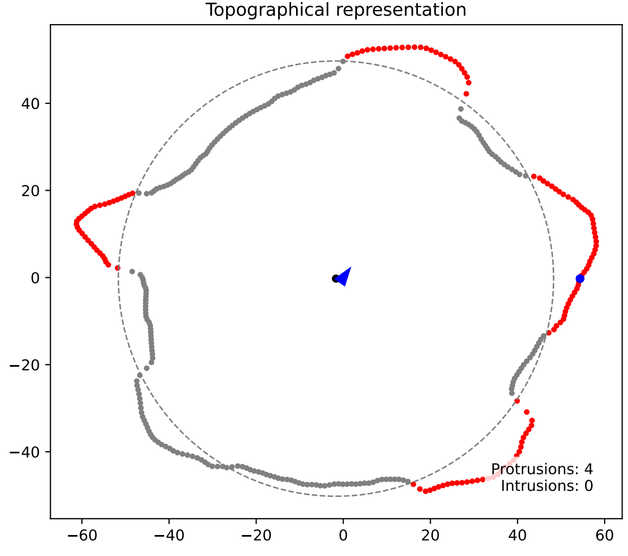

Shape evolution (t = 11.00)
Riemann Velocity: 0.2098
Max curvature: 0.0445
760
740
720
700
680
660
640
620
540
560
580
600
620

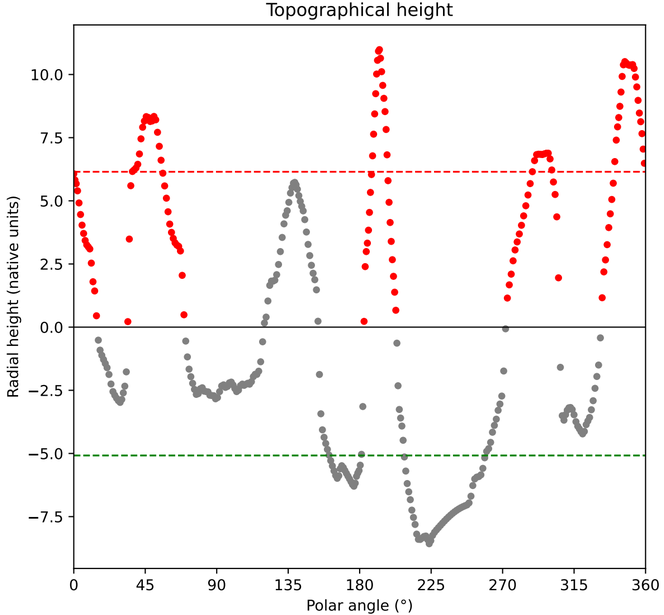

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

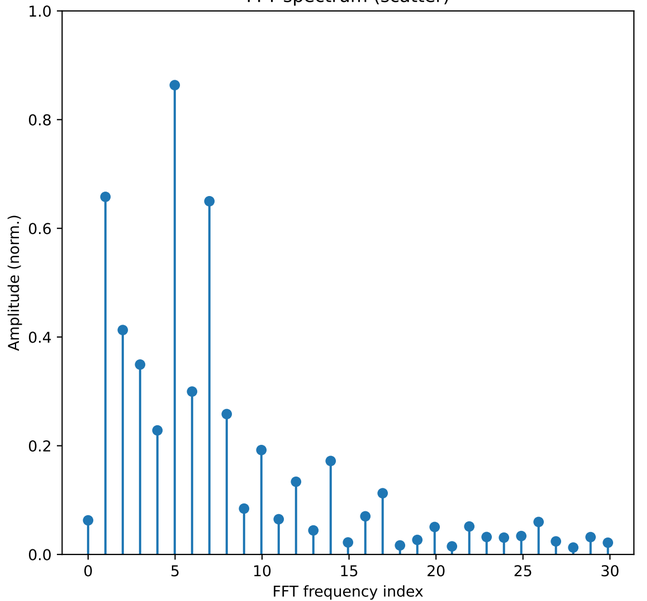

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

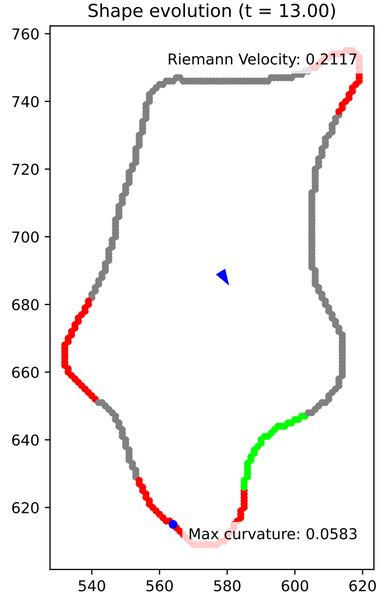

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

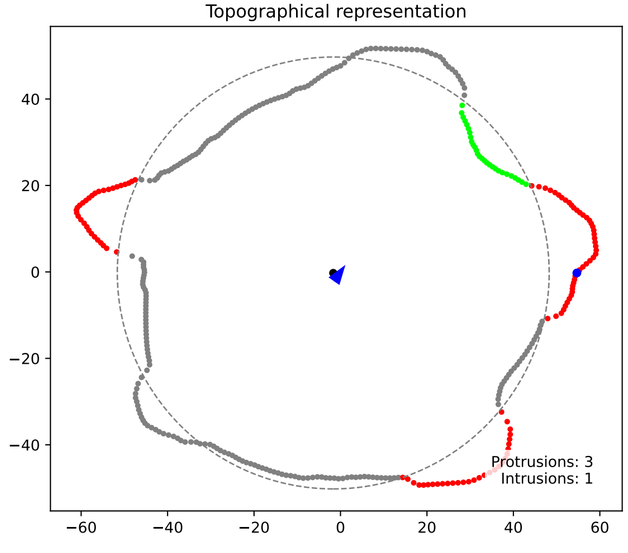

Shape evolution (t = 12.00)
Riemann Velocity: 0.2035
Max curvature: 0.0432
760
740
720
700
680
660
640
620
540
560
580
600
620

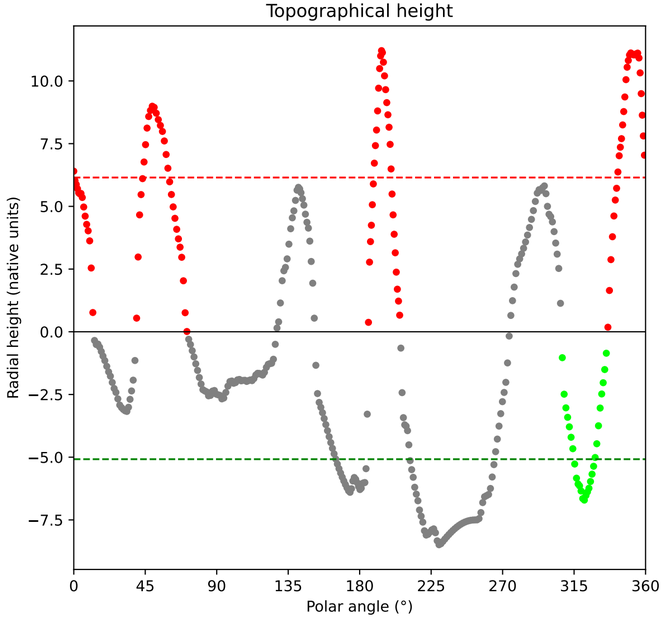

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

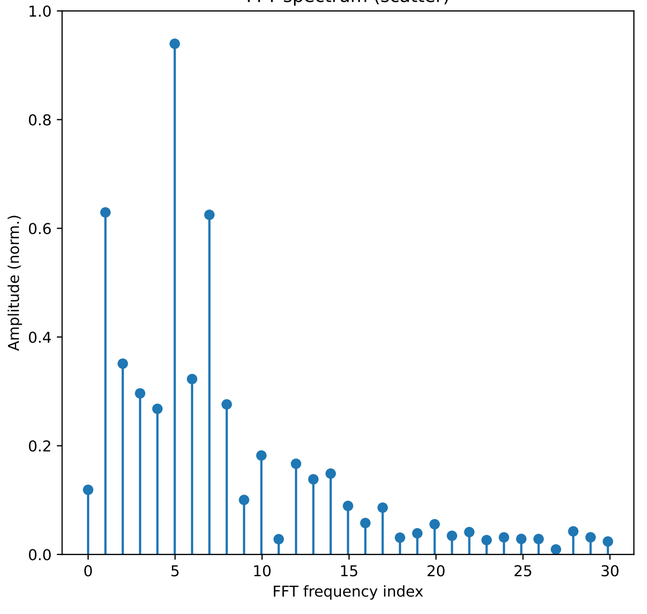

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

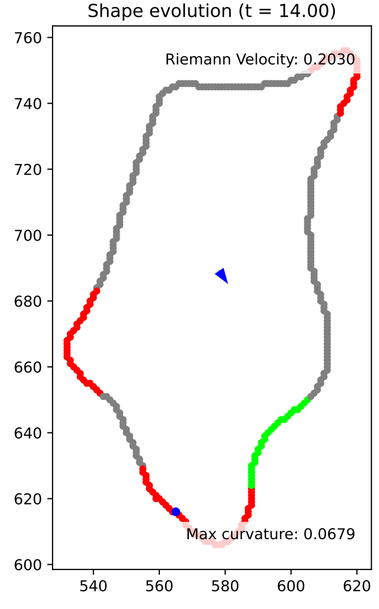

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

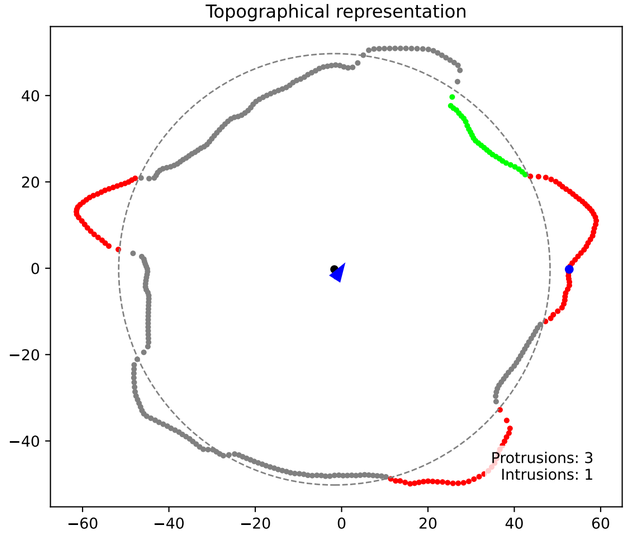

Shape evolution (t = 13.00)
Riemann Velocity: 0.2117
Max curvature: 0.0583
760
740
720
700
680
660
640
620
540
560
580
600
620

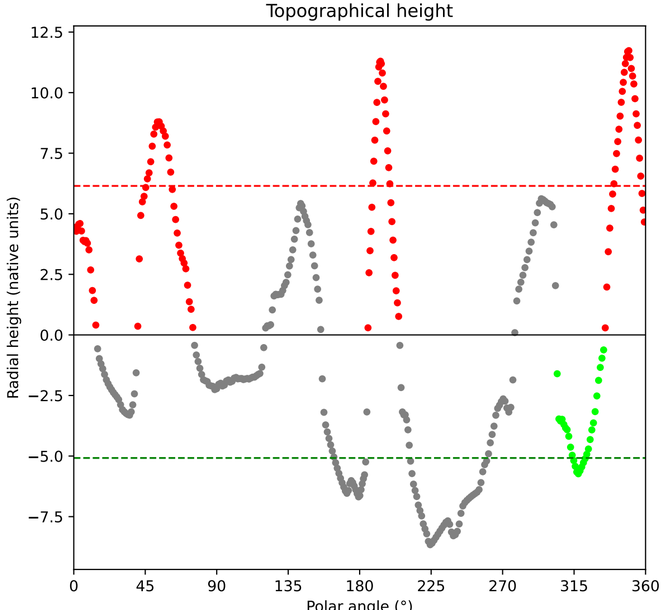

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

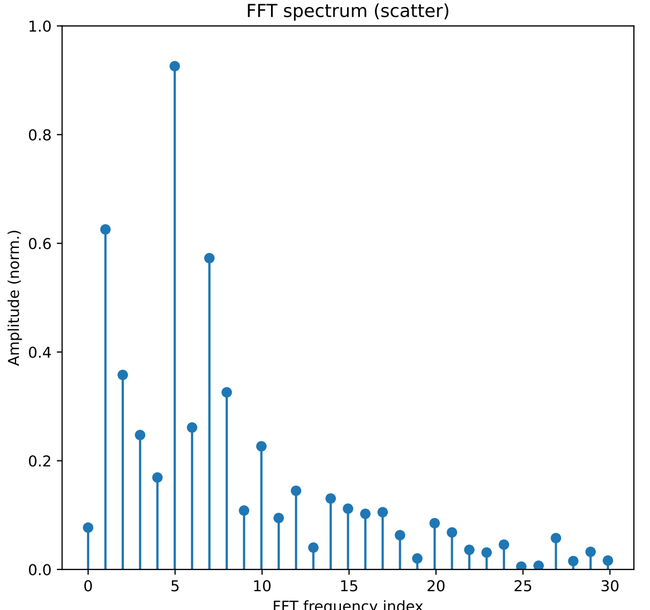

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

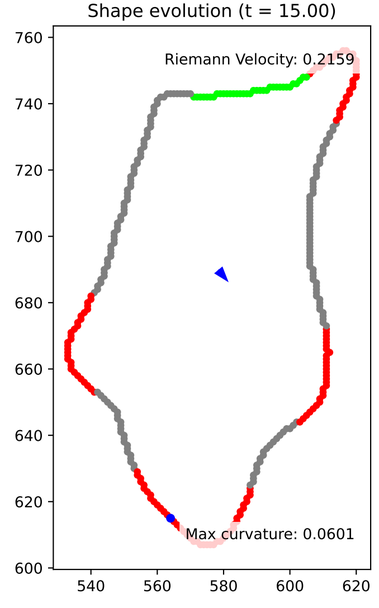

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

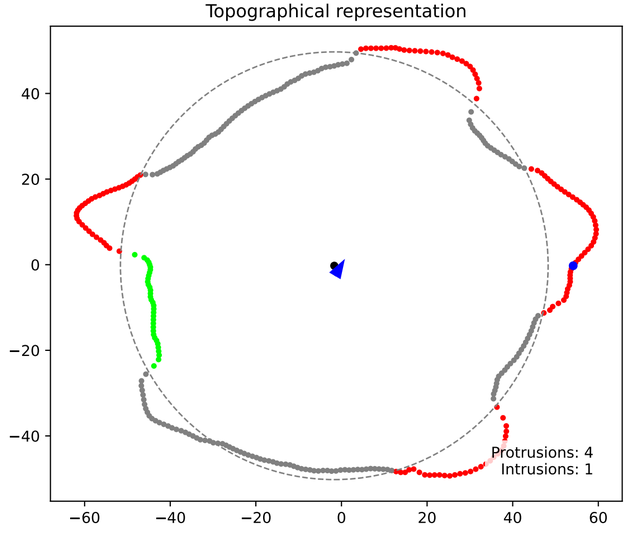

Shape evolution (t = 14.00)
Riemann Velocity: 0.2030
Max curvature: 0.0679
760
740
720
700
680
660
640
620
600
540
560
580
600
620

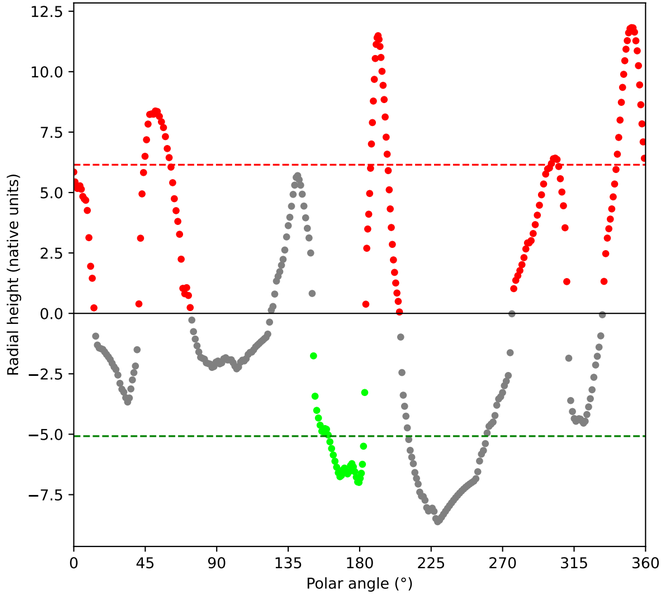

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

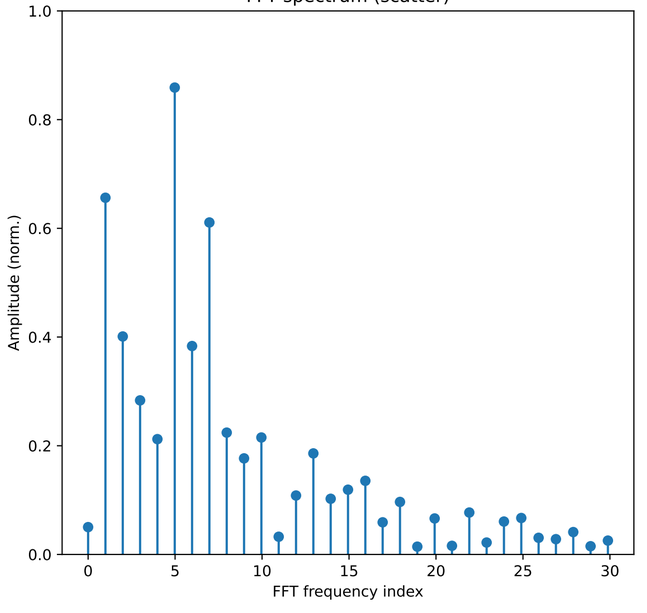

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

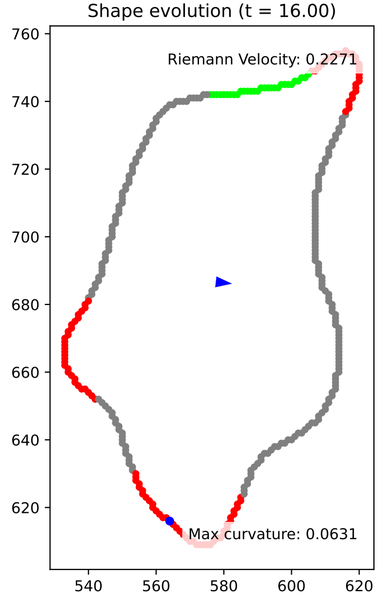

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

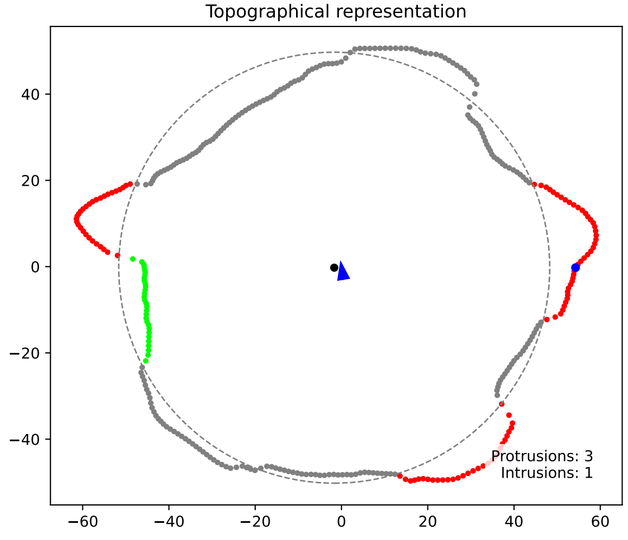

Shape evolution (t = 15.00)
Riemann Velocity: 0.2159
Max curvature: 0.0601

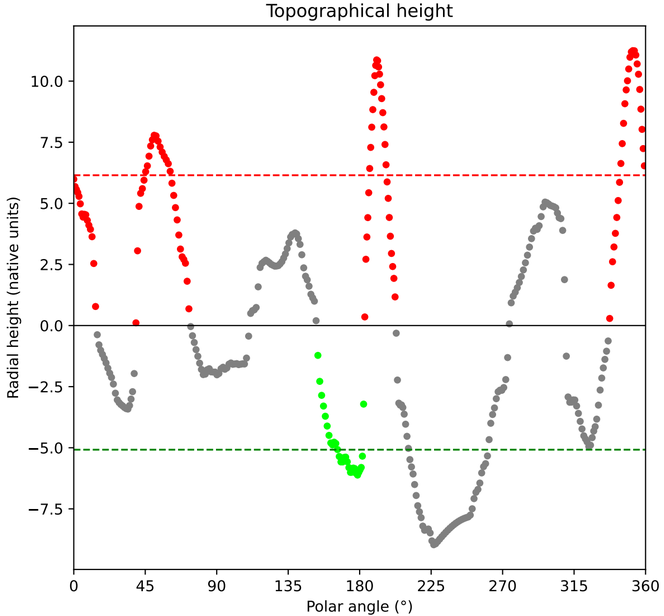

Topographical representation
Protrusions: 4
Intrusions: 1

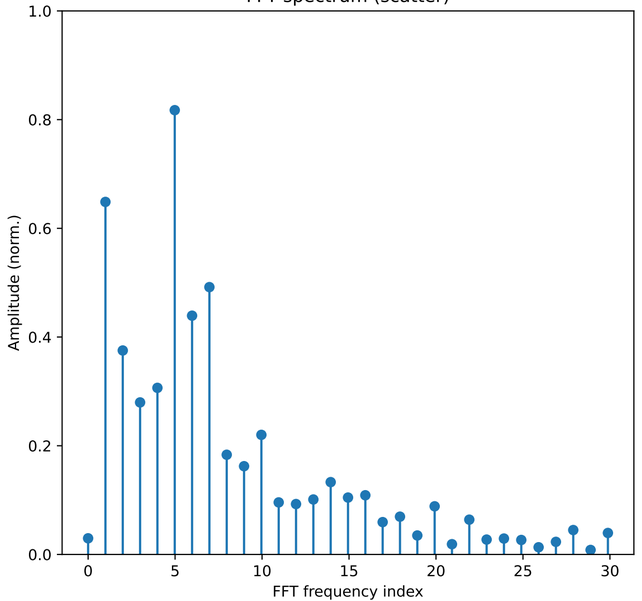

Topographical height
Radial height (native units)
Polar angle (°)

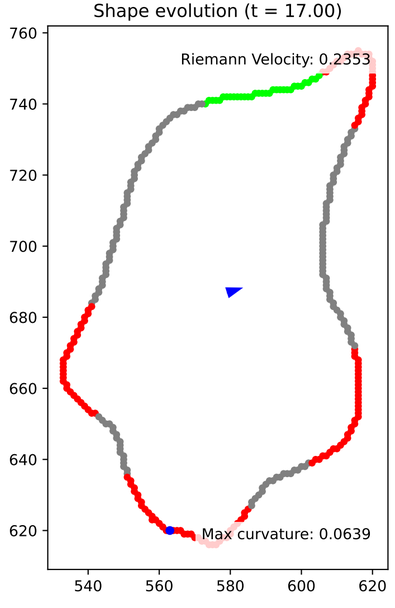

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index

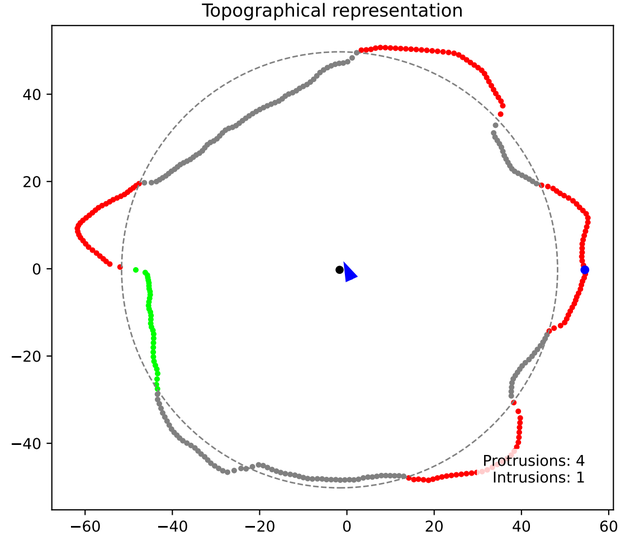

Shape evolution (t = 16.00)
Riemann Velocity: 0.2271
Max curvature: 0.0631
760
740
720
700
680
660
640
620
540
560
580
600
620

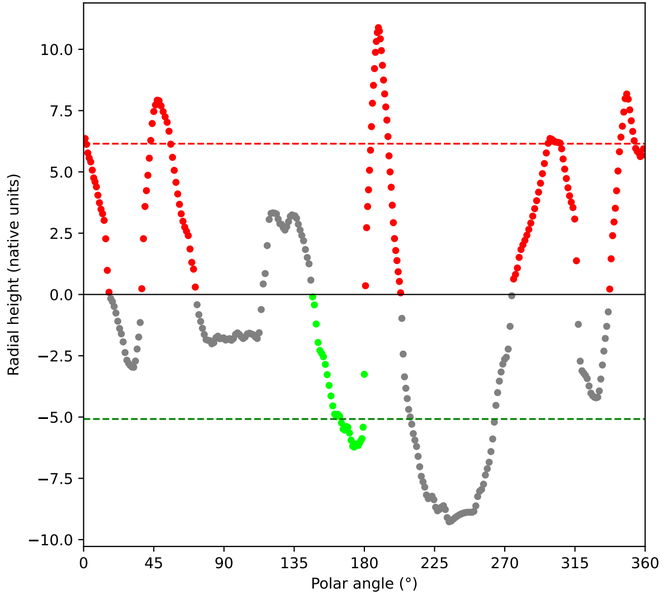

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

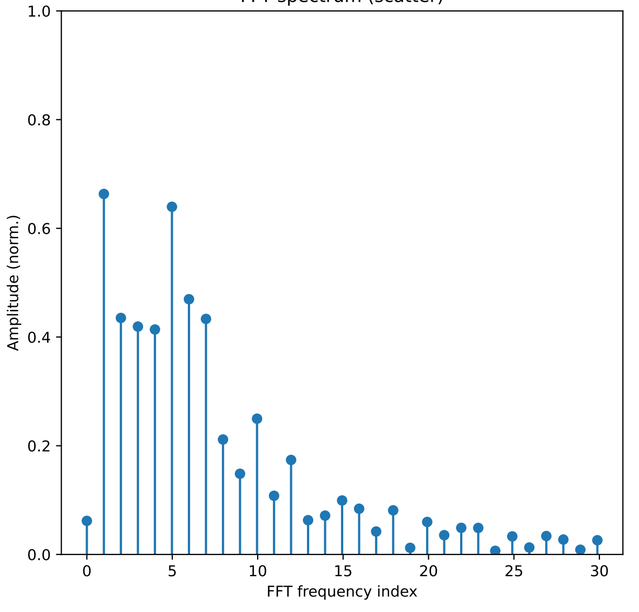

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

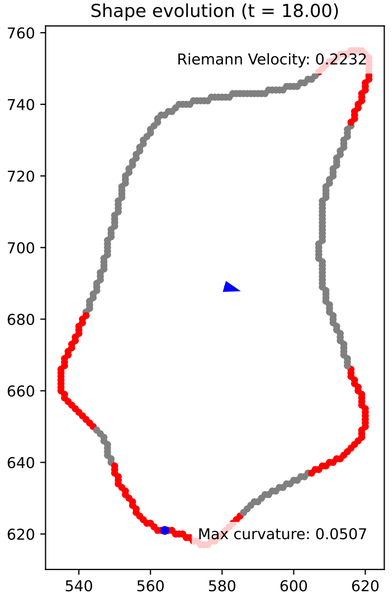

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

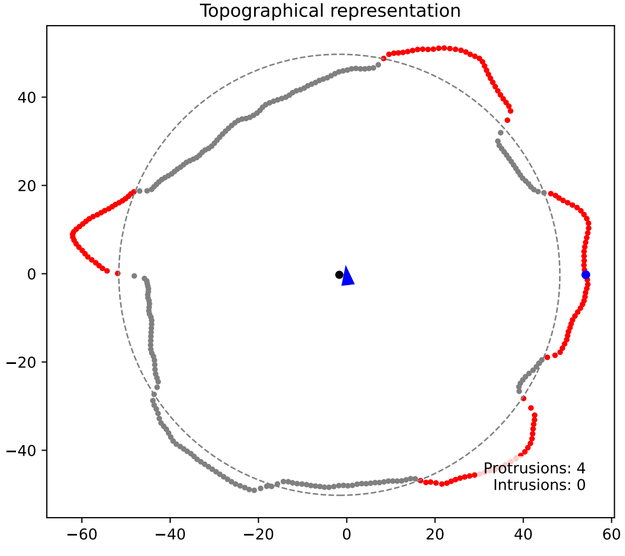

Shape evolution (t = 17.00)
Riemann Velocity: 0.2353
Max curvature: 0.0639

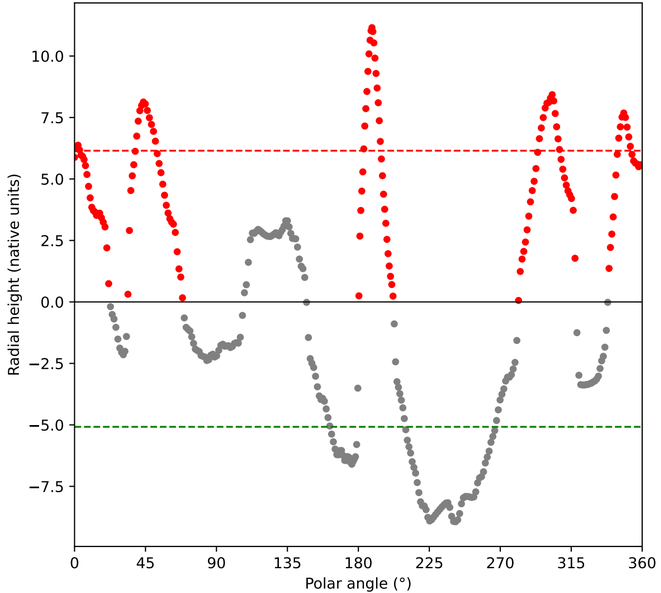

Topographical representation
Protrusions: 4
Intrusions: 1

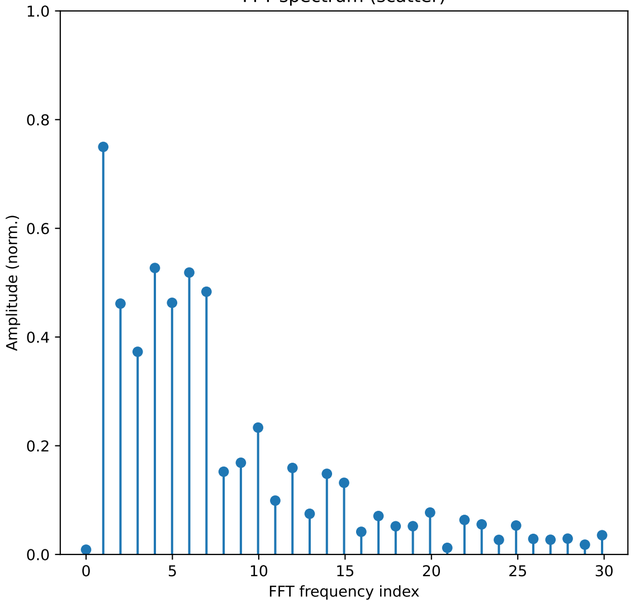

Topographical height
Radial height (native units)
Polar angle (°)

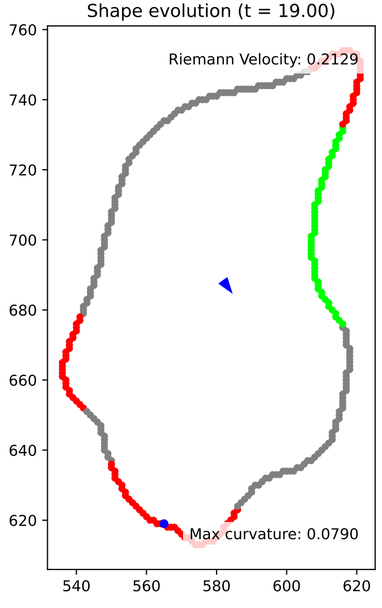

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index

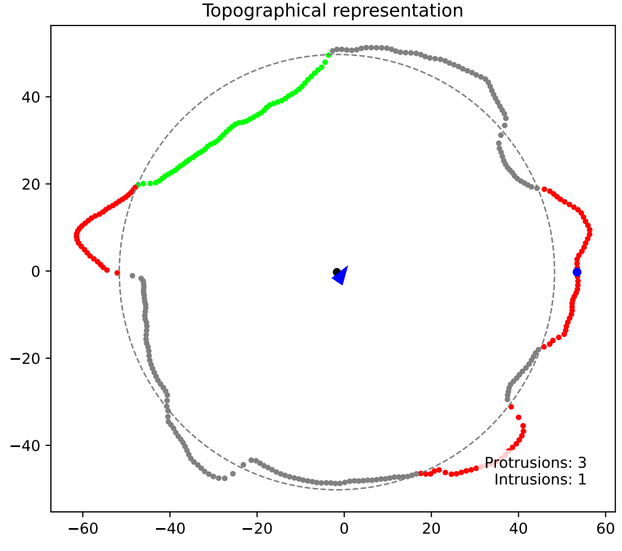

Shape evolution (t = 18.00)
Riemann Velocity: 0.2232
Max curvature: 0.0507

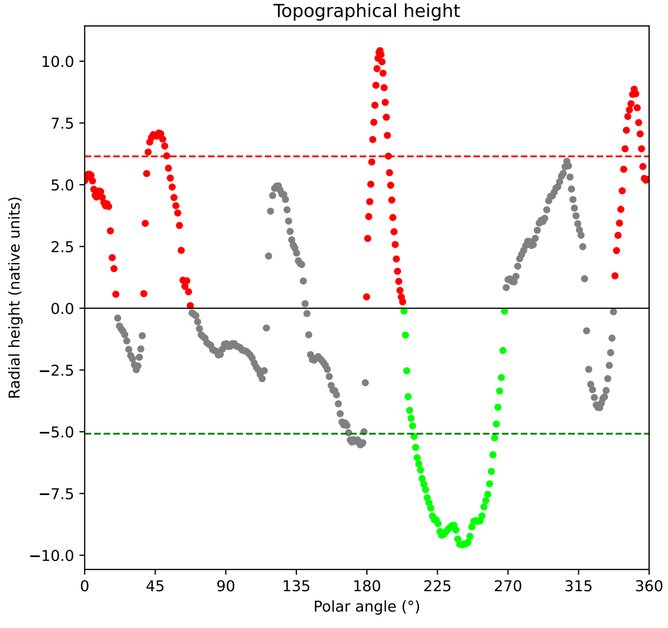

Topographical representation
Protrusions: 4
Intrusions: 0

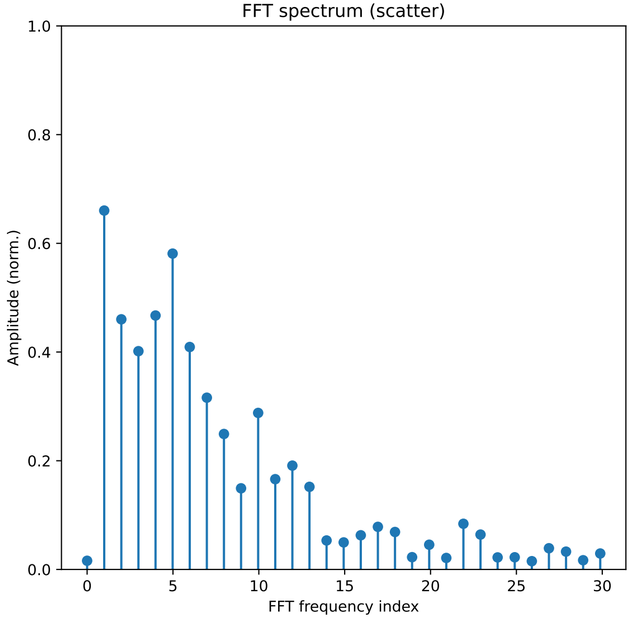

Topographical height
Radial height (native units)
Polar angle (°)

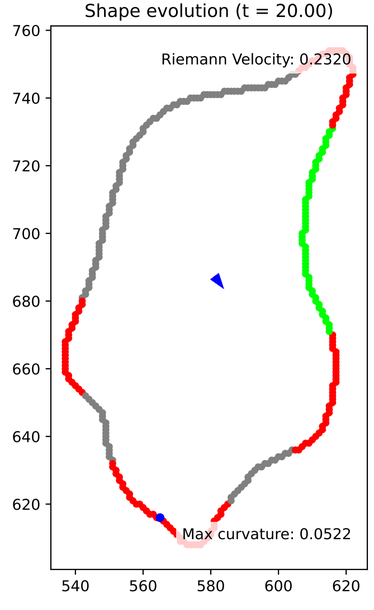

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index

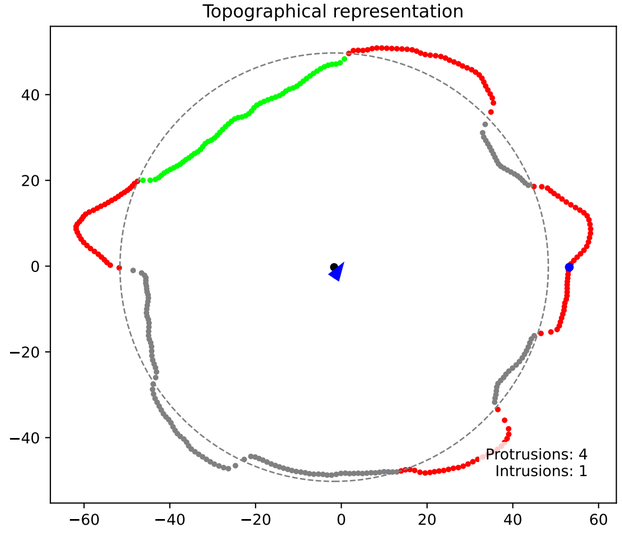

Shape evolution (t = 19.00)
Riemann Velocity: 0.2129
Max curvature: 0.0790
760
740
720
700
680
660
640
620
540
560
580
600
620

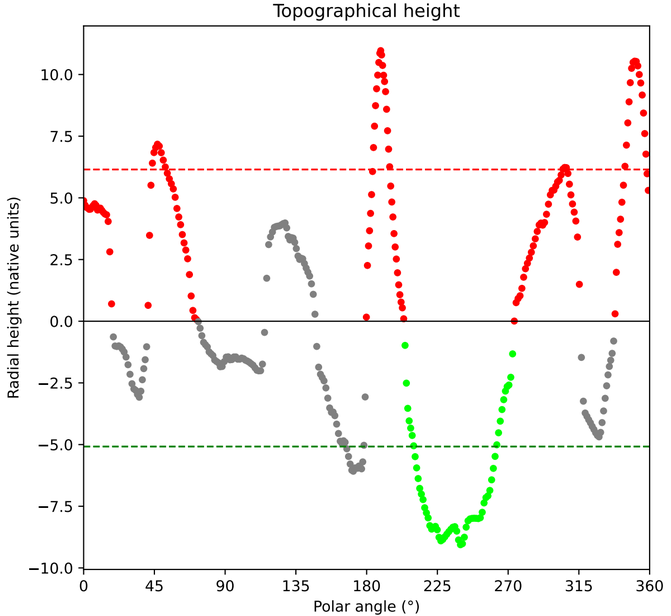

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

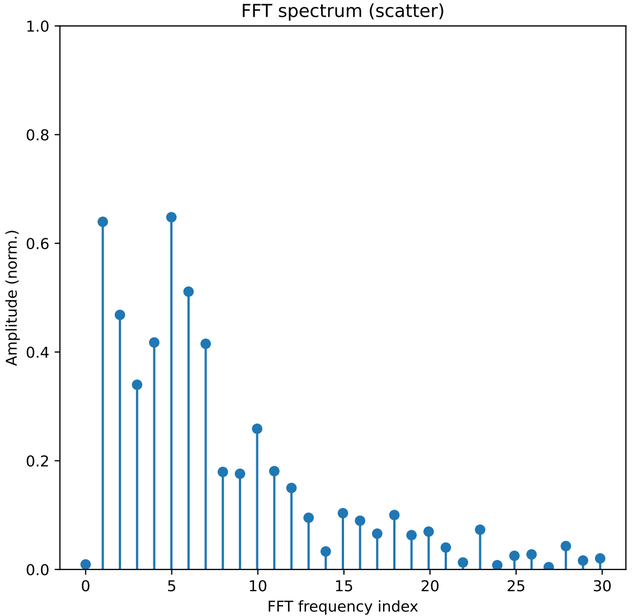

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

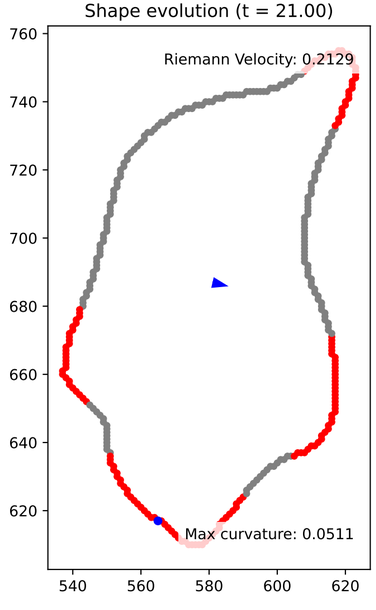

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

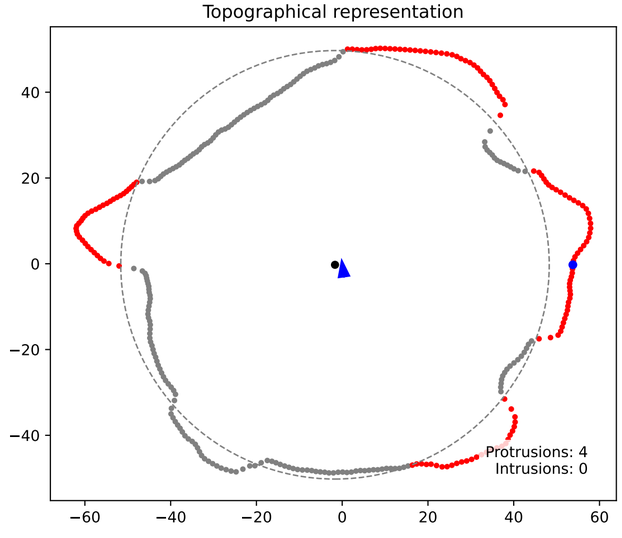

Shape evolution (t = 20.00)
Riemann Velocity: 0.2320
Max curvature: 0.0522
760
740
720
700
680
660
640
620
540
560
580
600
620

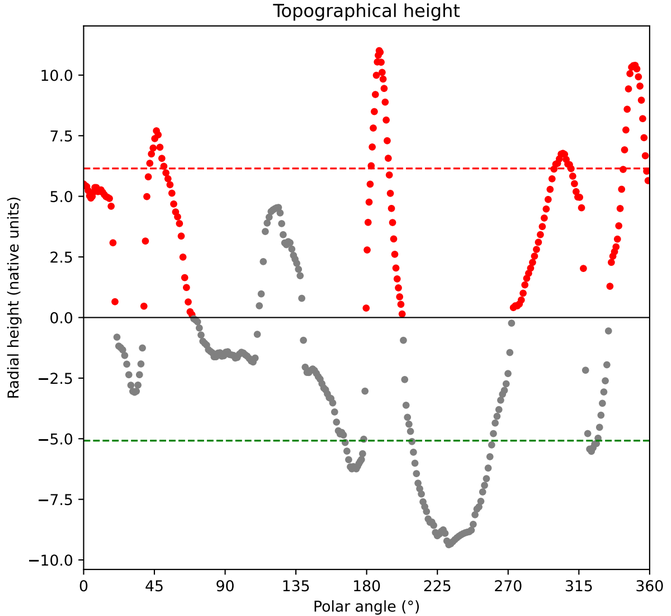

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

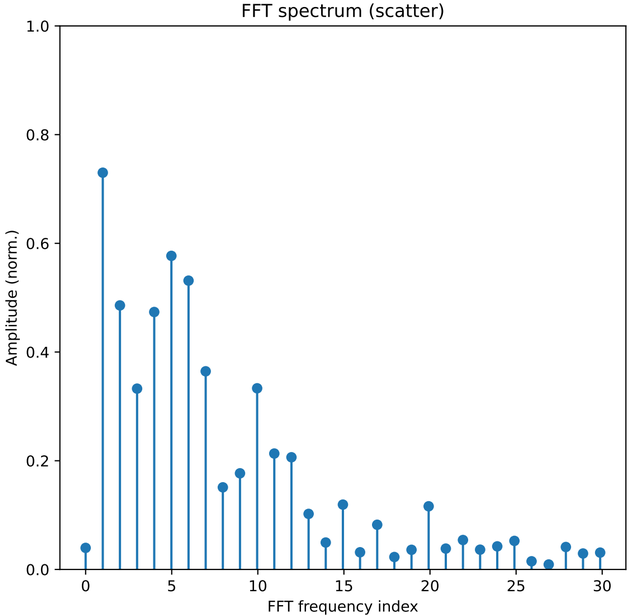

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

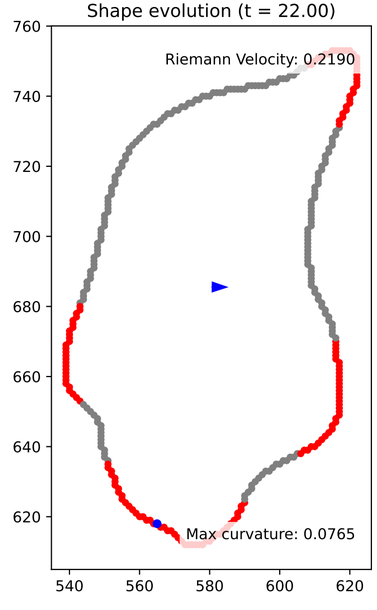

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

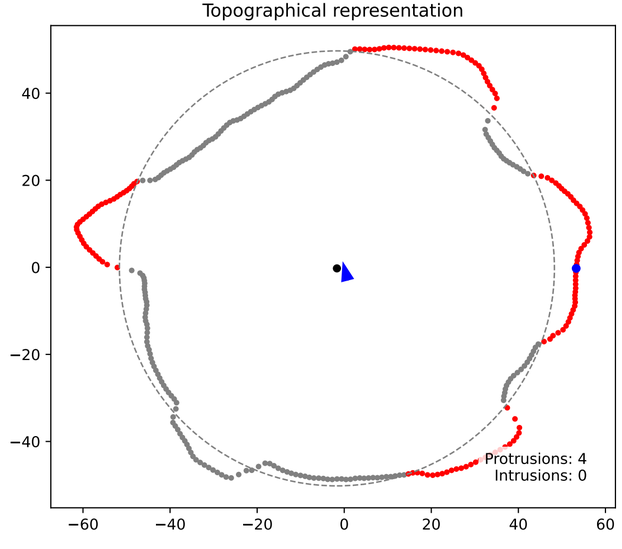

Shape evolution (t = 21.00)
Riemann Velocity: 0.2129
Max curvature: 0.0511
760
740
720
700
680
660
640
620
540
560
580
600
620

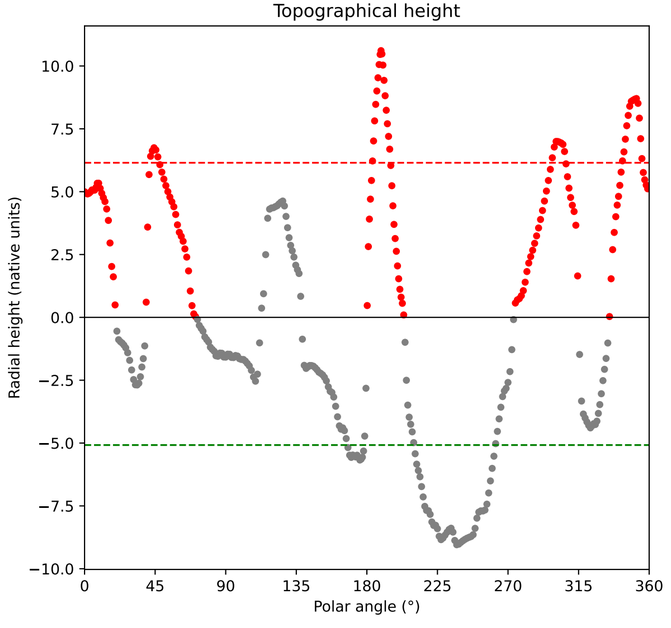

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

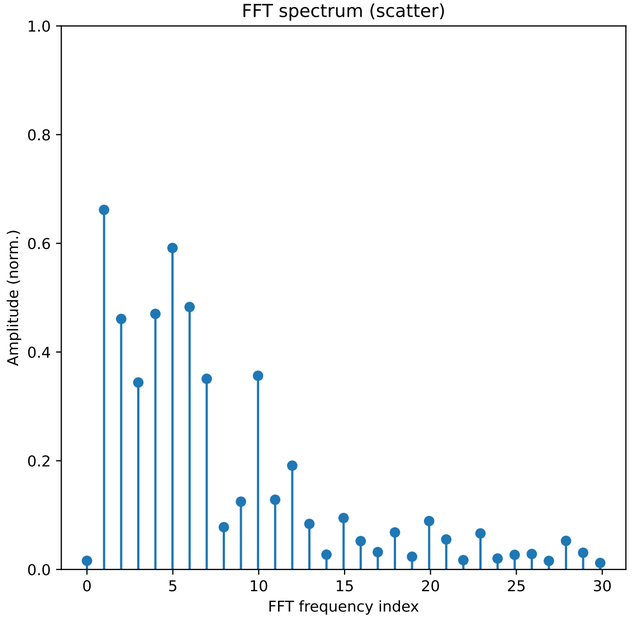

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

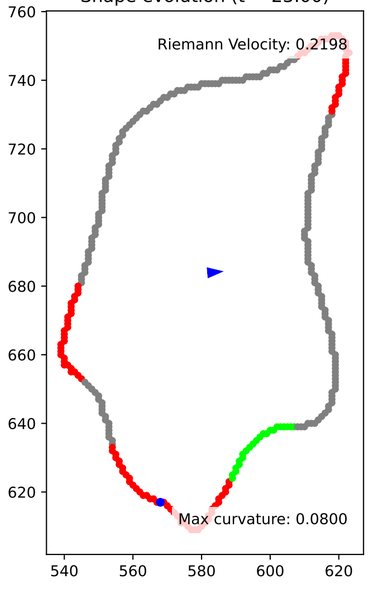

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

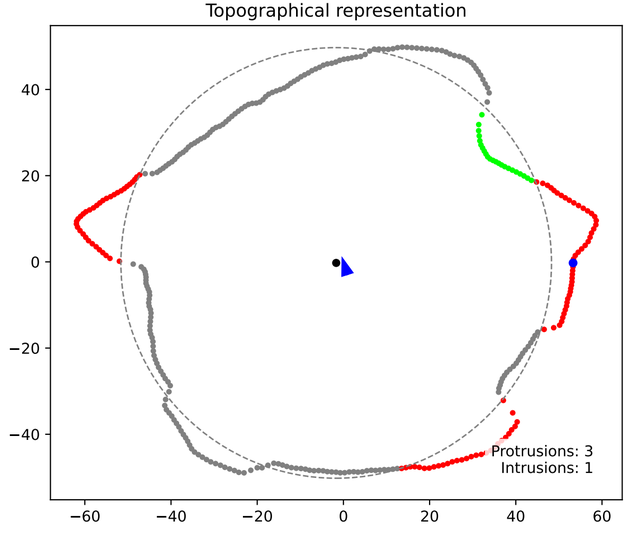

Shape evolution (t = 22.00)
Riemann Velocity: 0.2190
Max curvature: 0.0765
760
740
720
700
680
660
640
620
540
560
580
600
620

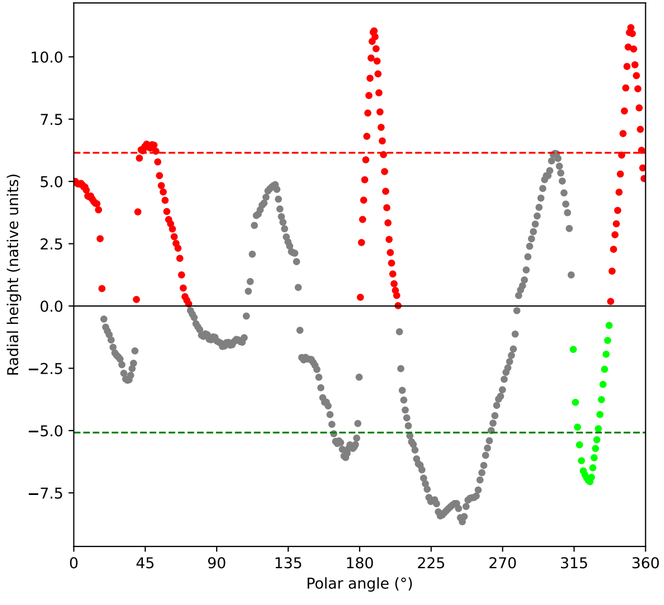

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

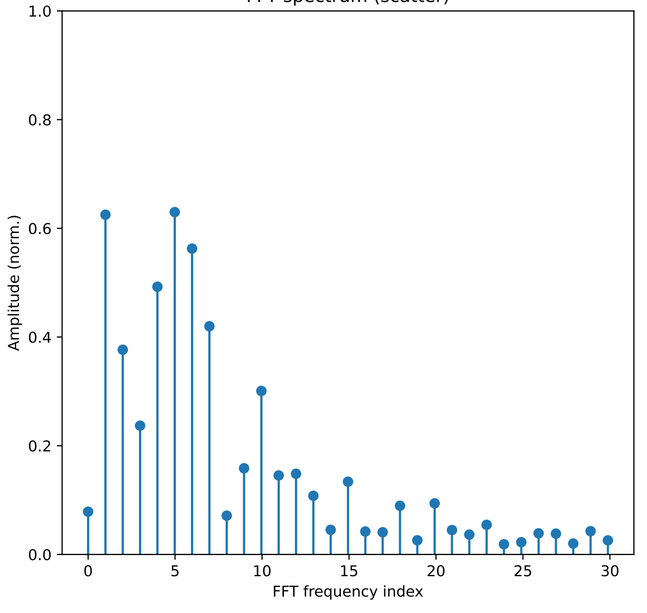

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

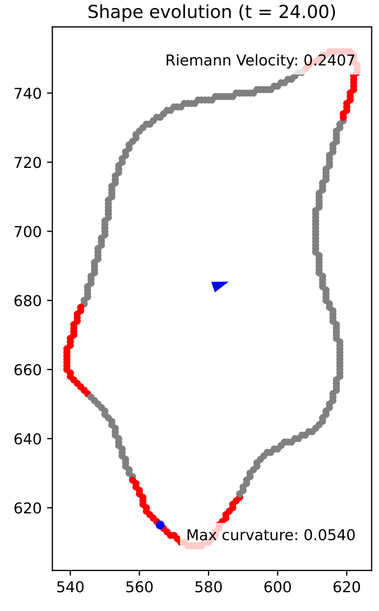

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

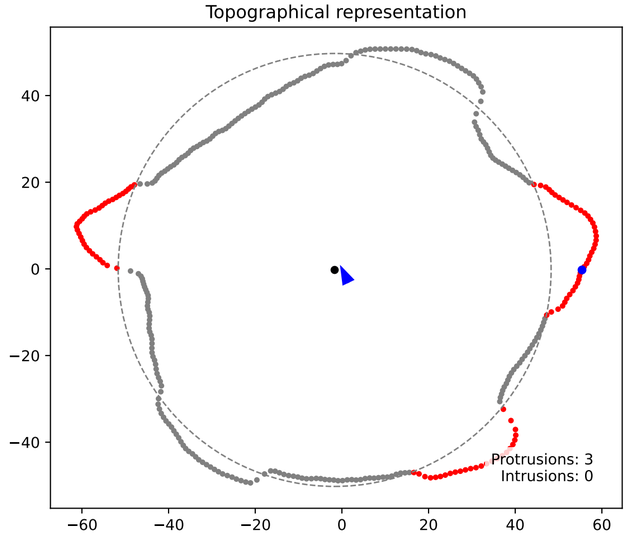

Shape evolution (t = 23.00)
Riemann Velocity: 0.2198
Max curvature: 0.0800
760
740
720
700
680
660
640
620
540
560
580
600
620

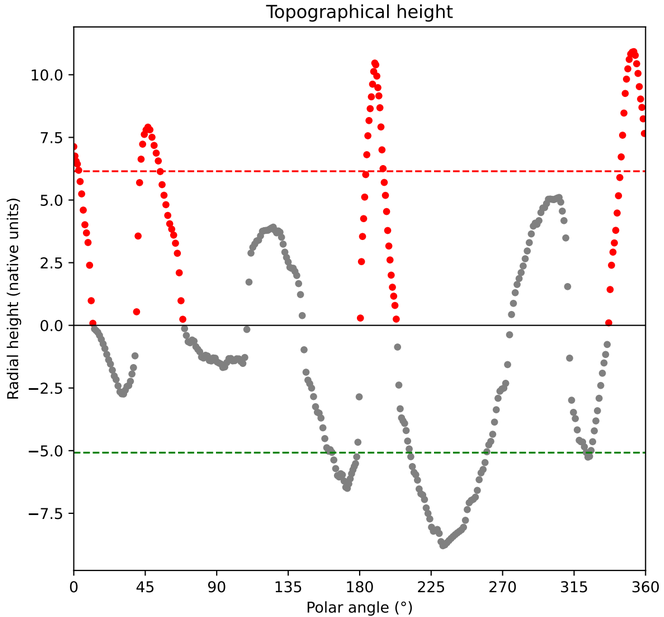

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

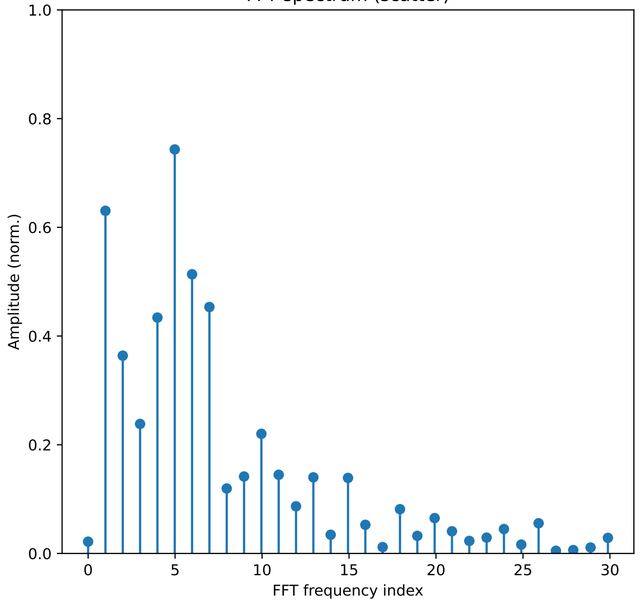

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

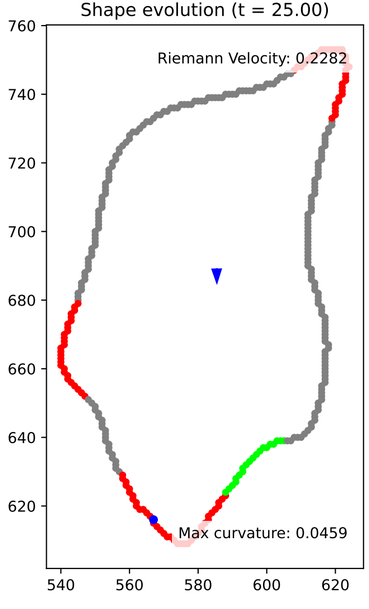

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

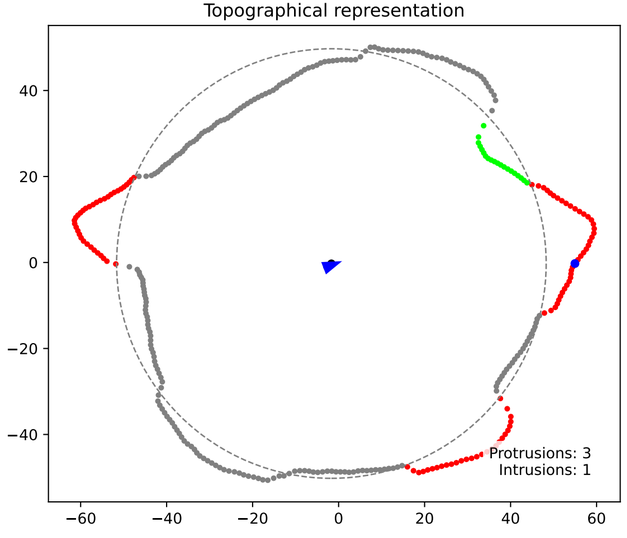

Shape evolution (t = 24.00)
Riemann Velocity: 0.2407
Max curvature: 0.0540
740
720
700
680
660
640
620
540
560
580
600
620

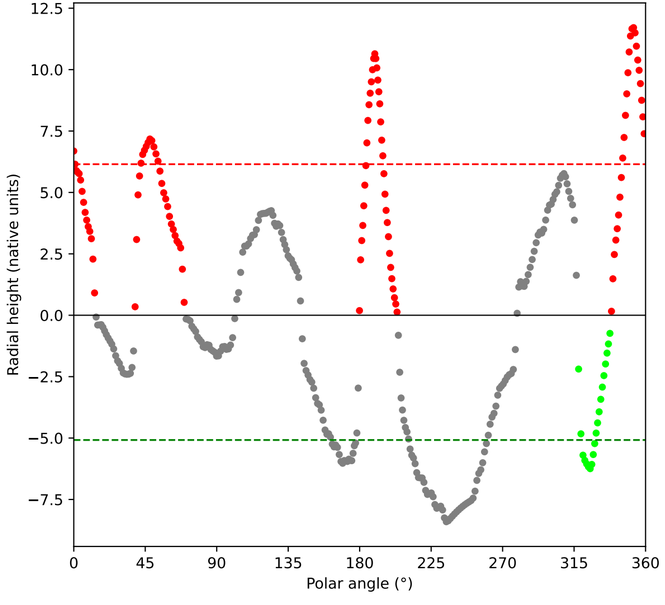

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

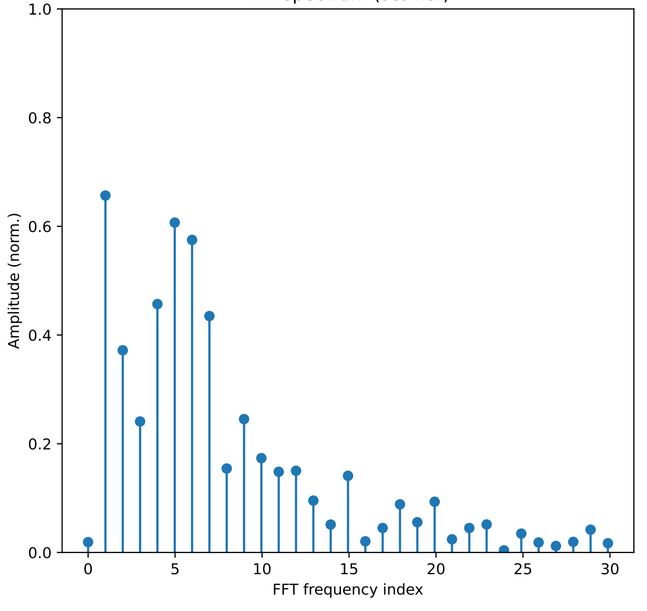

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

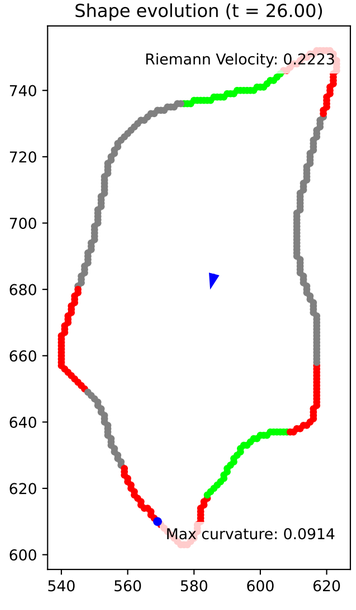

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

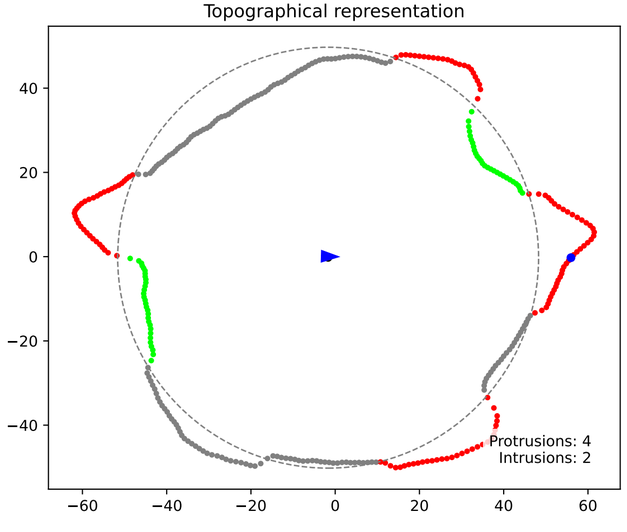

Shape evolution (t = 25.00)
Riemann Velocity: 0.2282
Max curvature: 0.0459

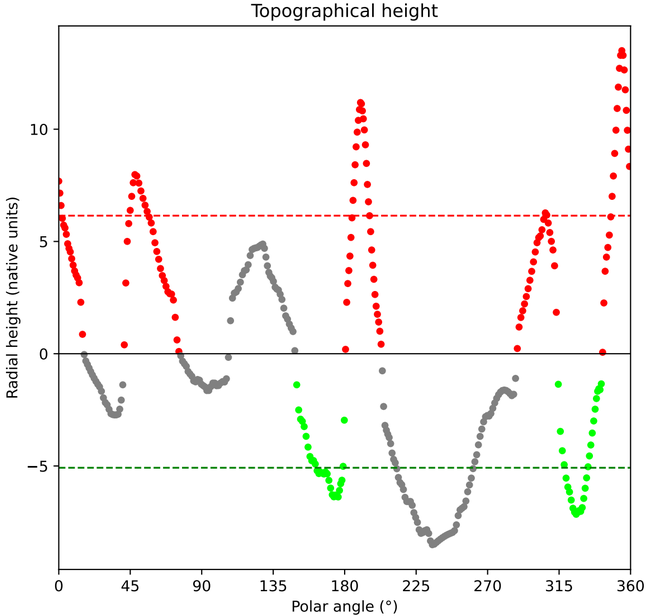

Topographical representation
Protrusions: 3
Intrusions: 1

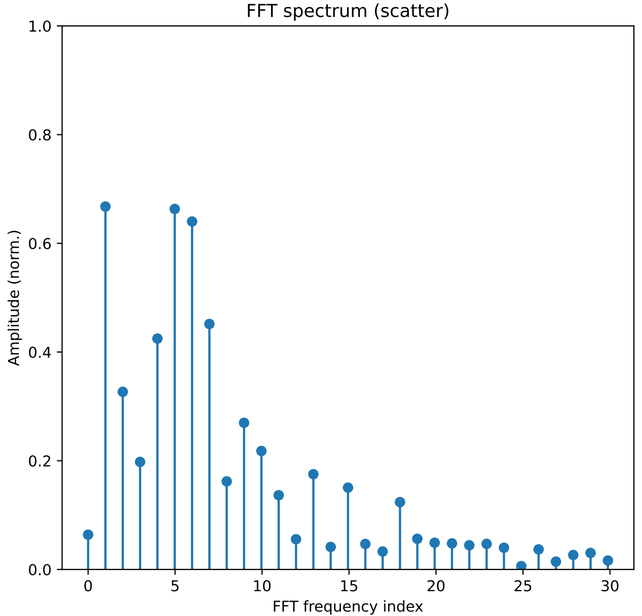

Topographical height
Radial height (native units)
Polar angle (°)

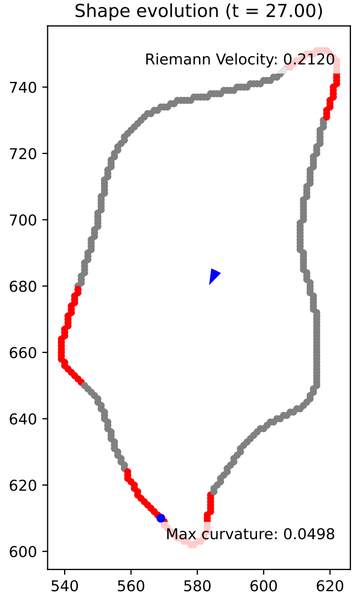

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index

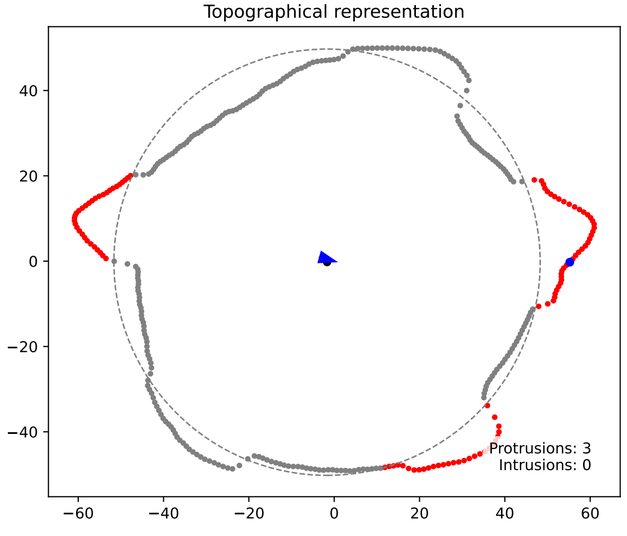

Shape evolution (t = 26.00)
Riemann Velocity: 0.2223
Max curvature: 0.0914
740
720
700
680
660
640
620
600
540
560
580
600
620

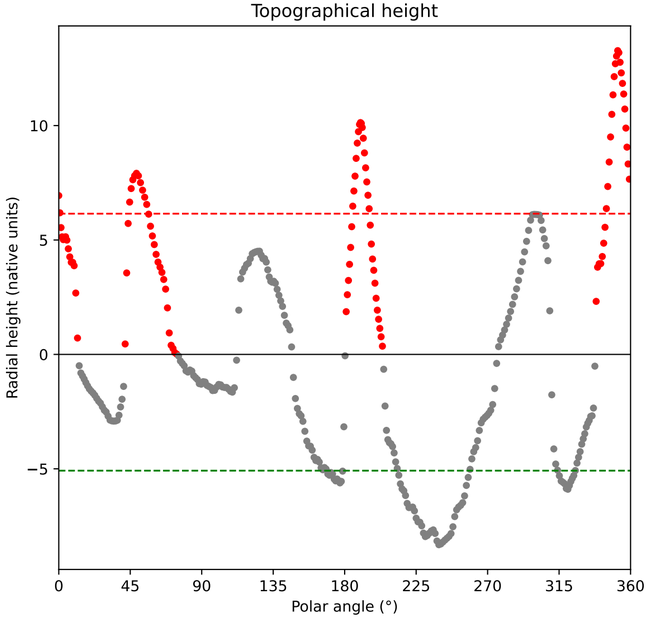

Topographical representation
Protrusions: 4
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

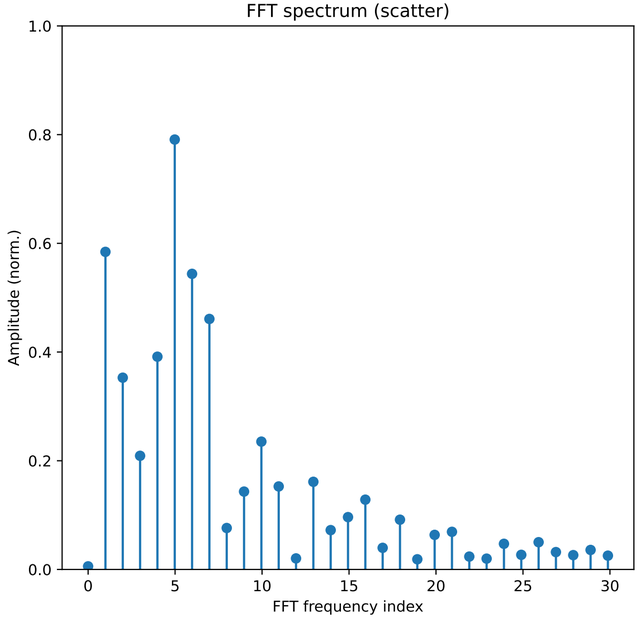

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
0
45
90
135
180
225
270
315
360

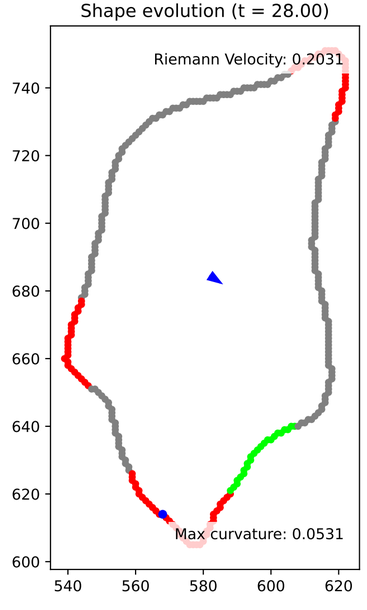

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

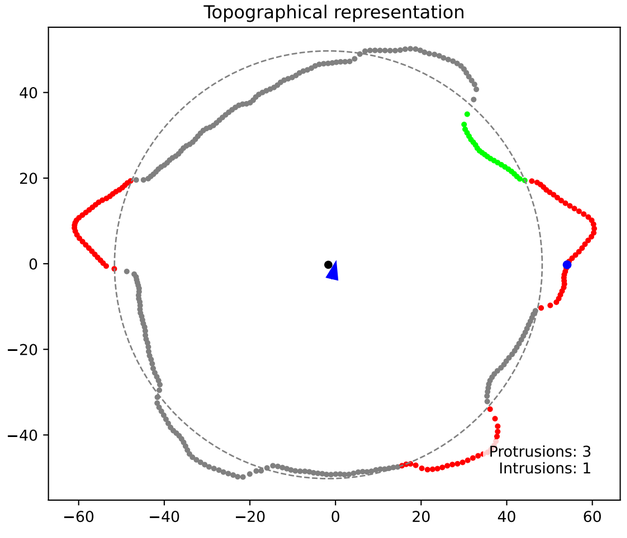

Shape evolution (t = 27.00)
Riemann Velocity: 0.2120
Max curvature: 0.0498
740
720
700
680
660
640
620
600
540
560
580
600
620

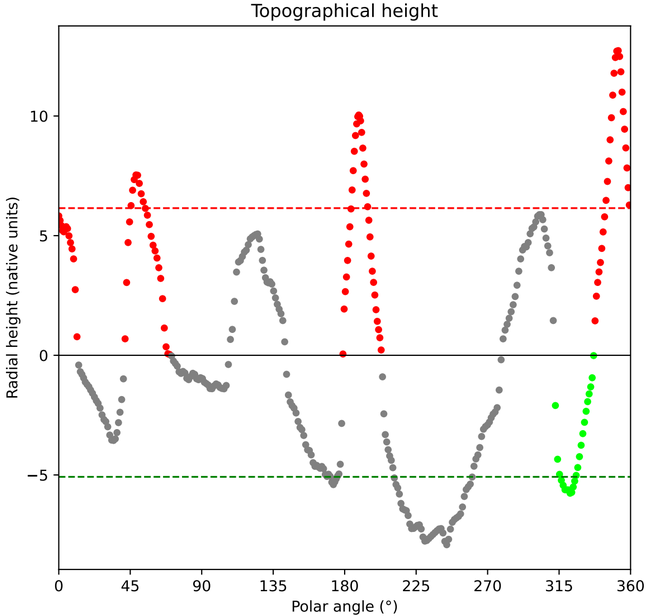

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

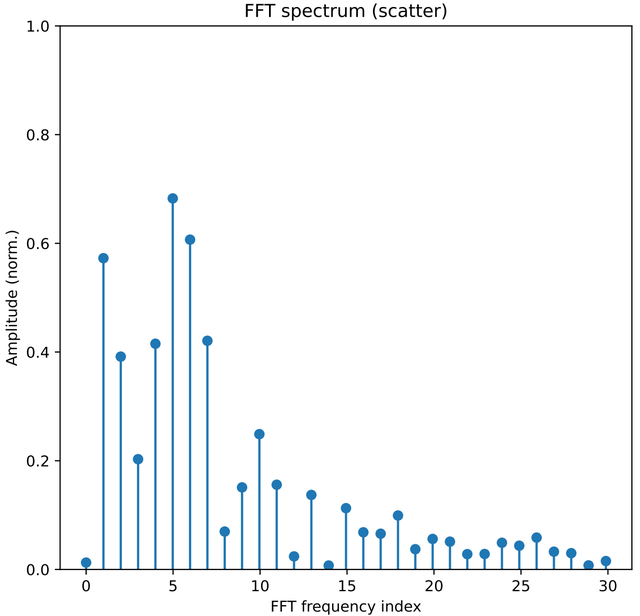

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
0
45
90
135
180
225
270
315
360

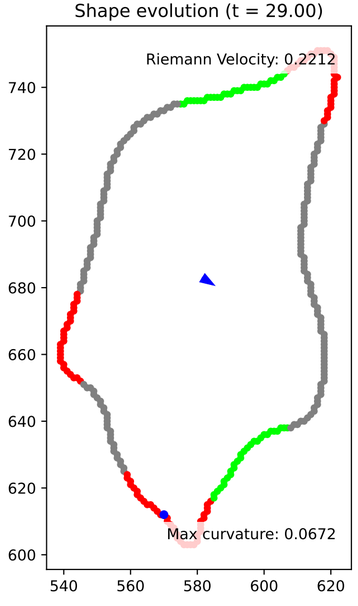

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

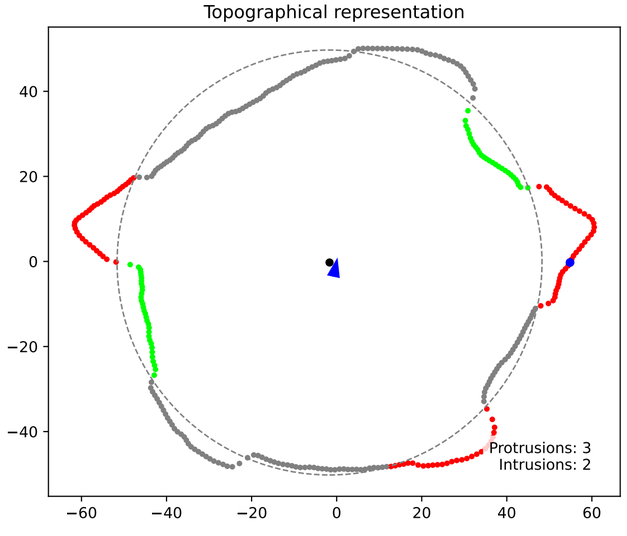

Shape evolution (t = 28.00)
Riemann Velocity: 0.2031
Max curvature: 0.0531
740
720
700
680
660
640
620
600
540
560
580
600
620

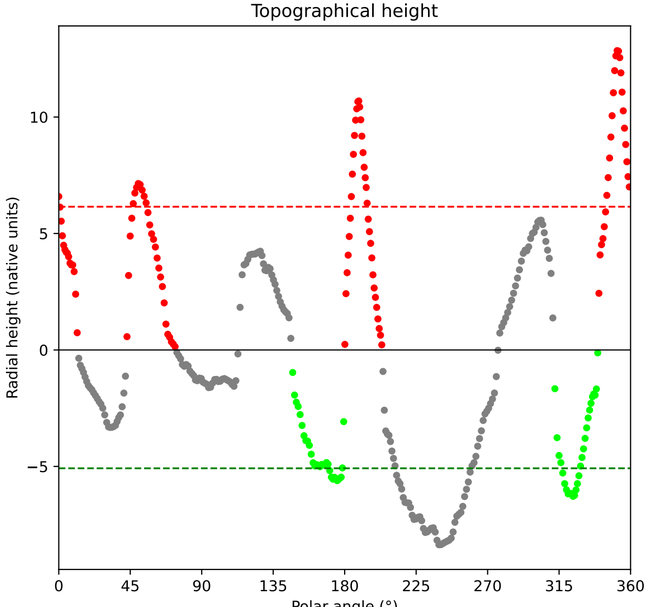

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

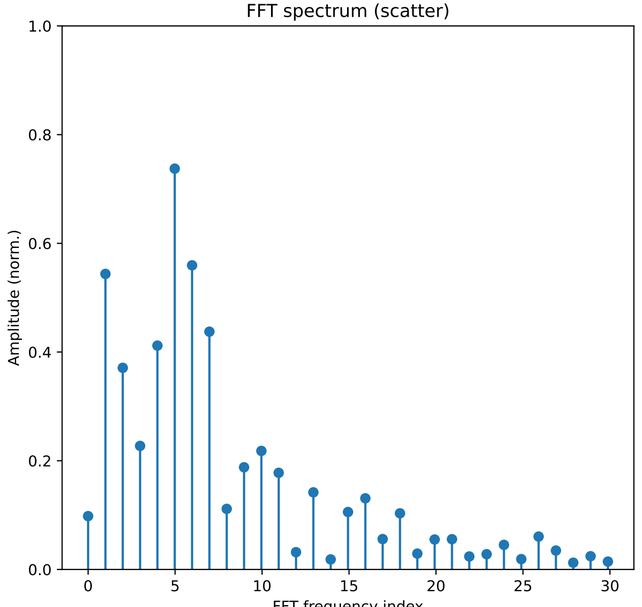

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
0
45
90
135
180
225
270
315
360

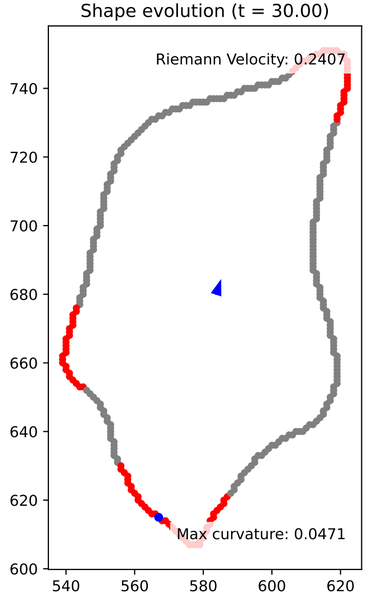

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

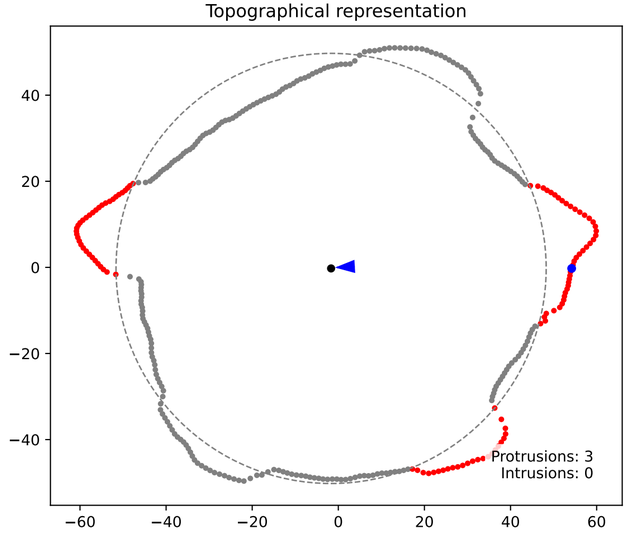

Shape evolution (t = 29.00)
Riemann Velocity: 0.2212
Max curvature: 0.0672
740
720
700
680
660
640
620
600
540
560
580
600
620

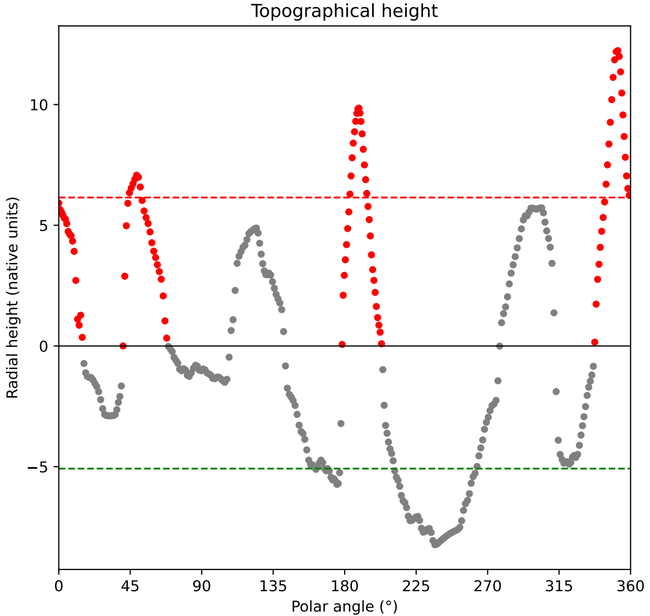

Topographical representation
Protrusions: 3
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

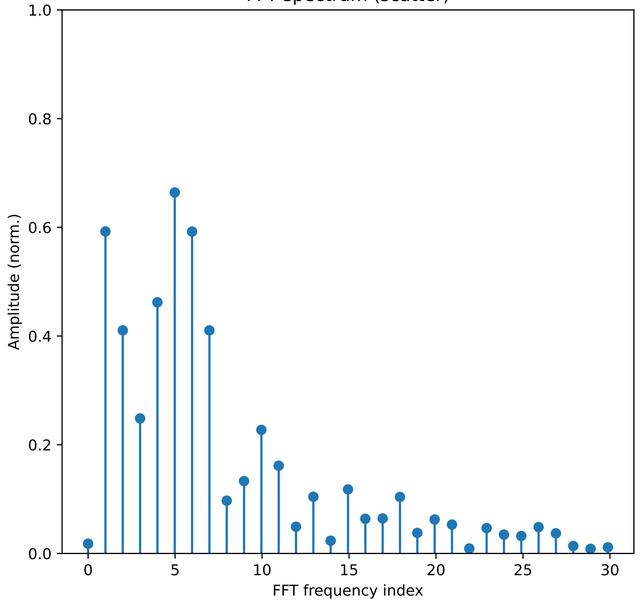

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
0
45
90
135
180
225
270
315
360

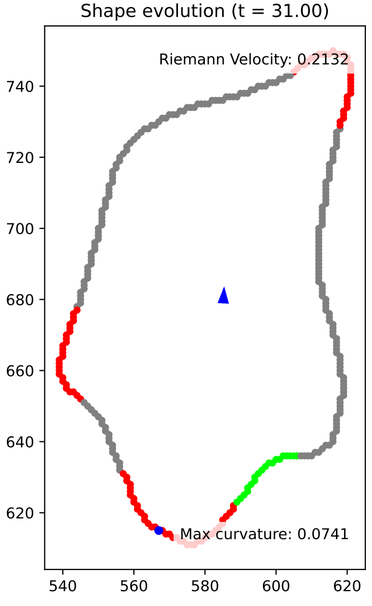

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

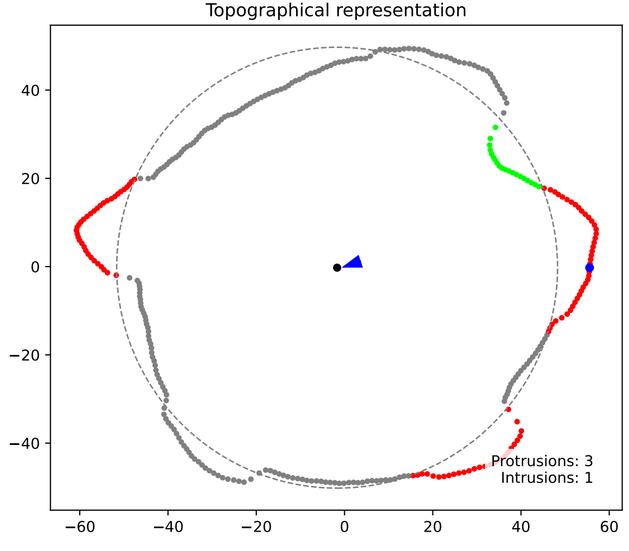

Shape evolution (t = 30.00)
Riemann Velocity: 0.2407
Max curvature: 0.0471
740
720
700
680
660
640
620
600
540
560
580
600
620

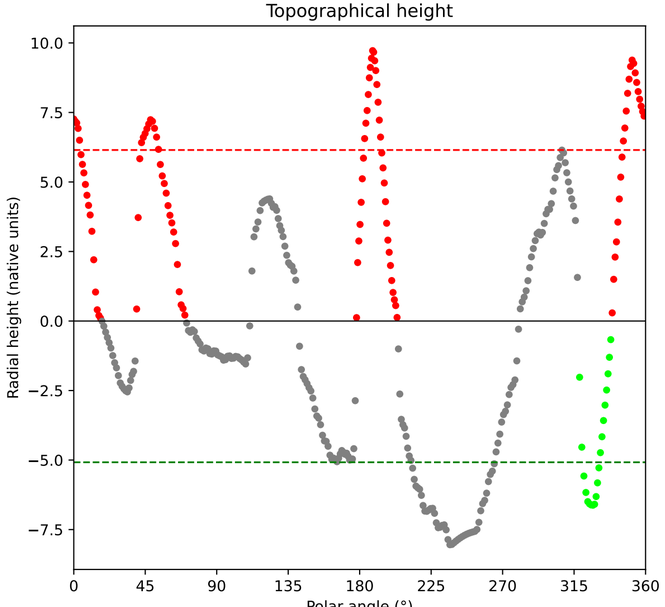

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

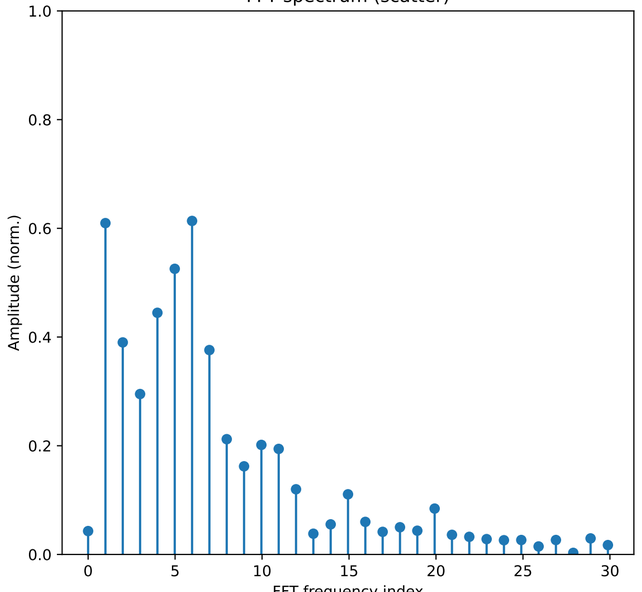

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
0
45
90
135
180
225
270
315
360

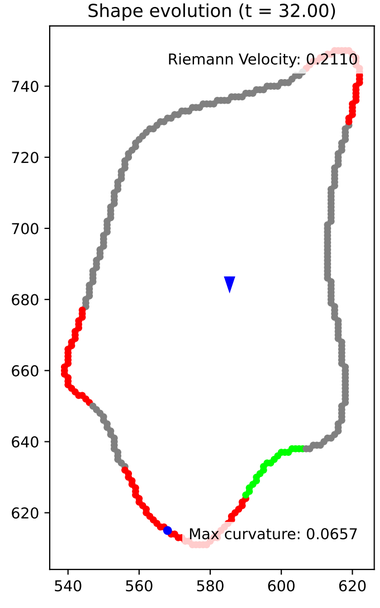

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

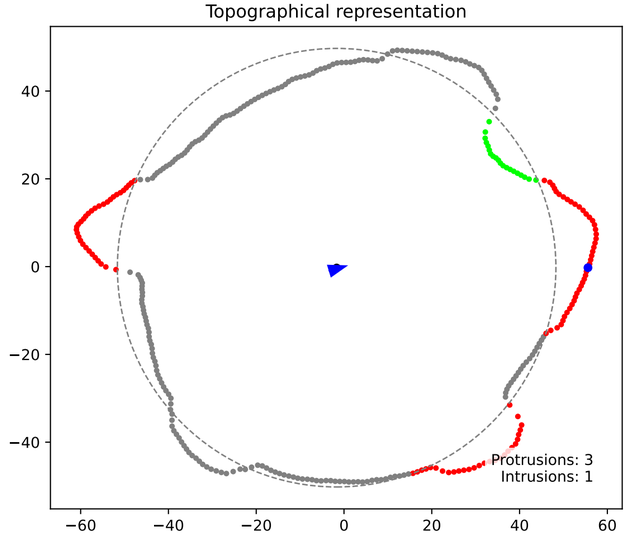

Shape evolution (t = 31.00)
Riemann Velocity: 0.2132
Max curvature: 0.0741
740
720
700
680
660
640
620
540
560
580
600
620

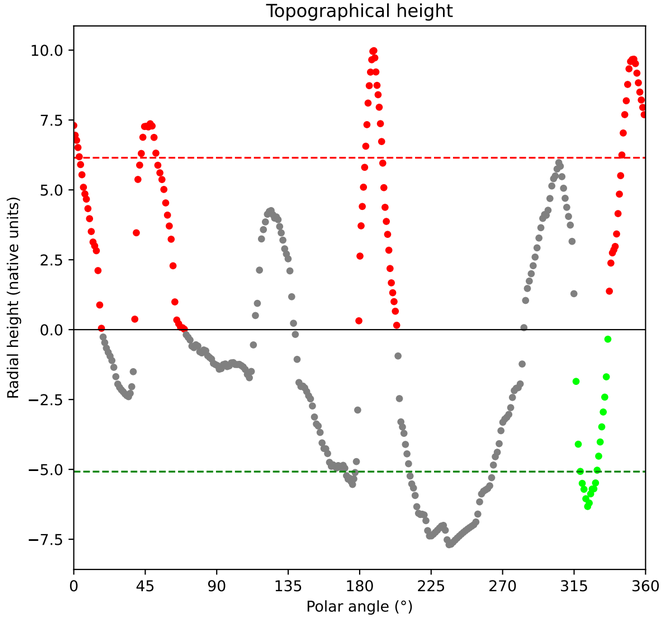

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

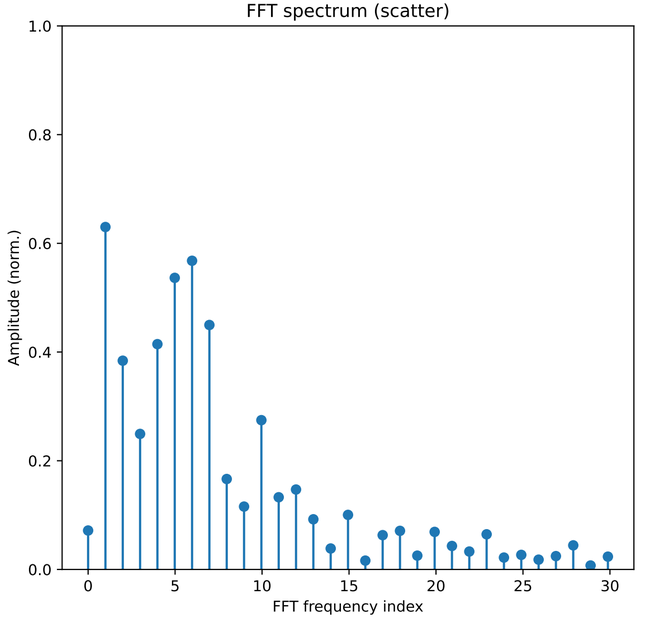

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

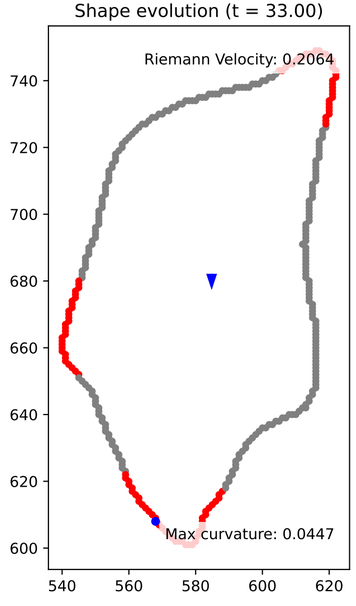

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

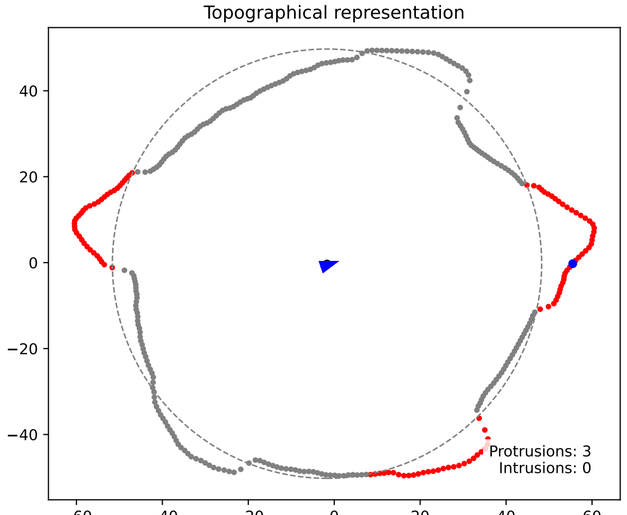

Shape evolution (t = 32.00)
Riemann Velocity: 0.2110
Max curvature: 0.0657
740
720
700
680
660
640
620
540
560
580
600
620

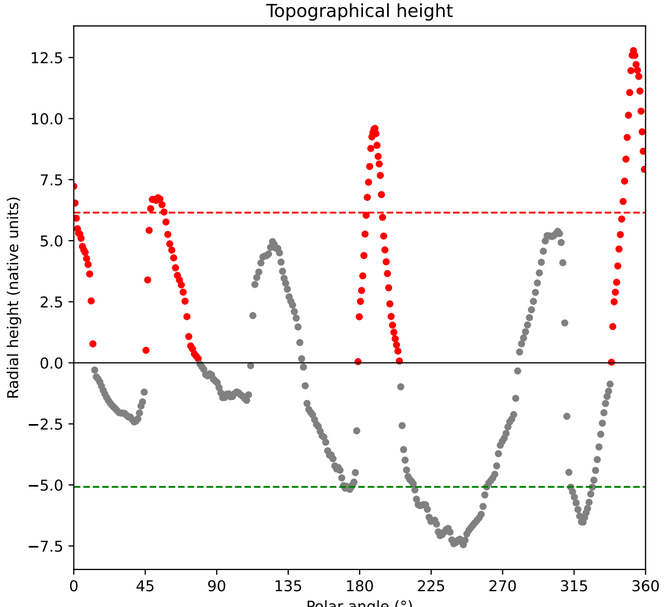

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

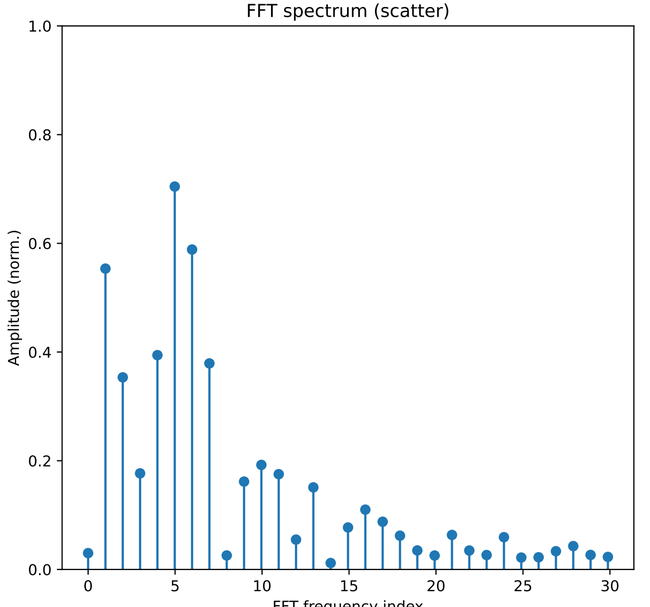

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

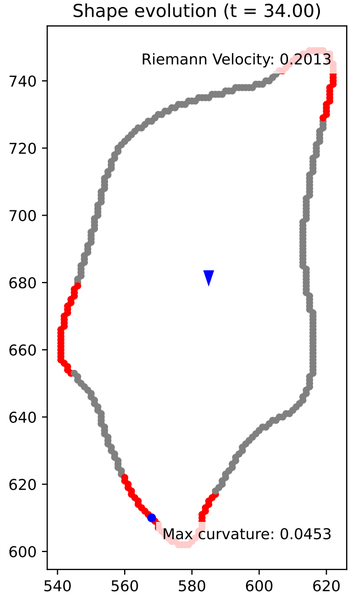

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

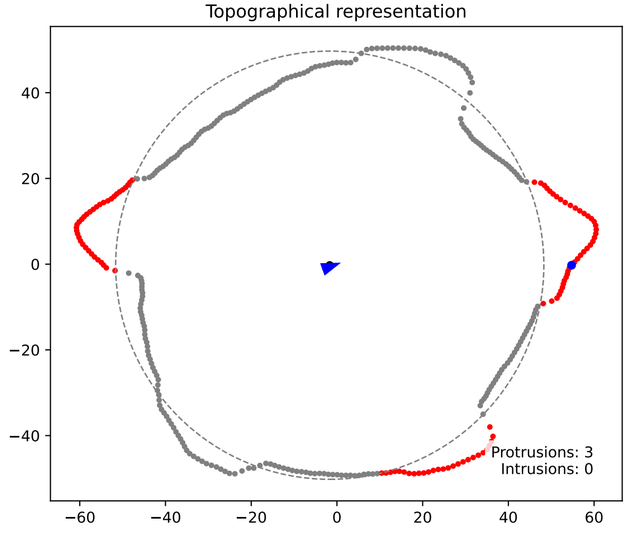

Shape evolution (t = 33.00)
Riemann Velocity: 0.2064
Max curvature: 0.0447
740
720
700
680
660
640
620
600
540
560
580
600
620

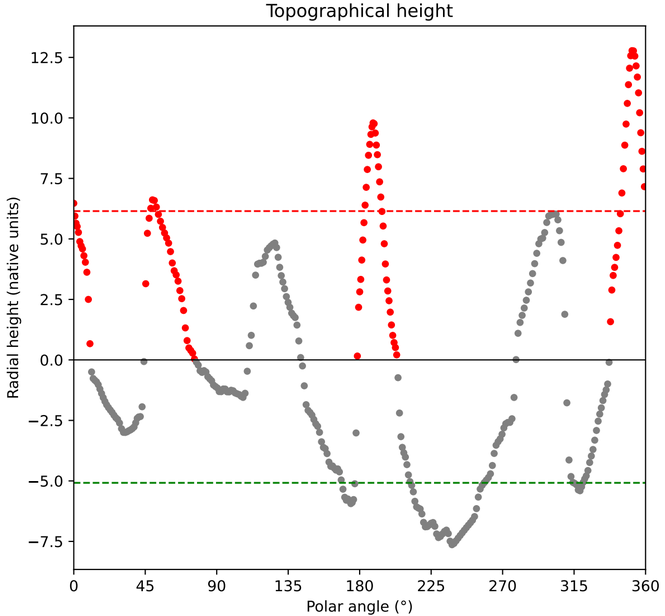

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

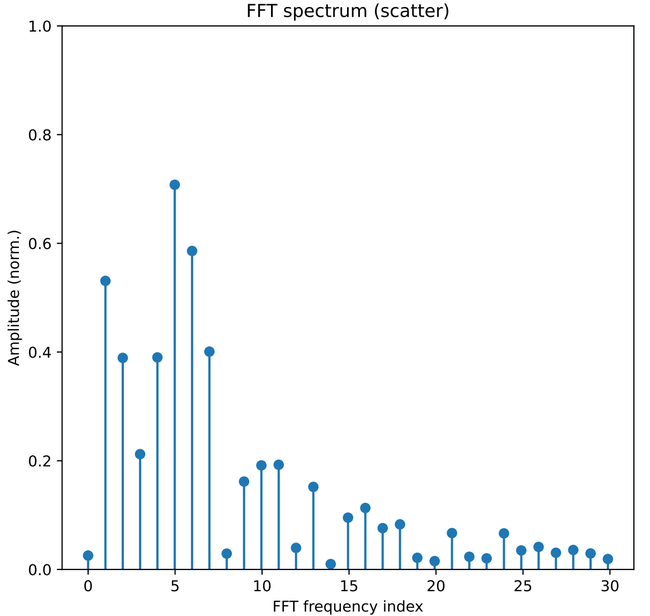

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

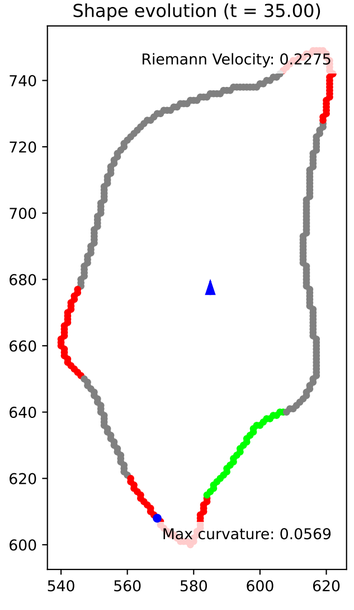

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

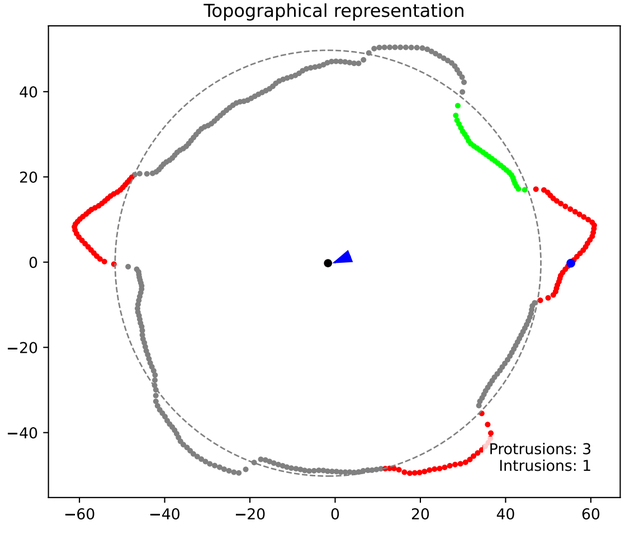

Shape evolution (t = 34.00)
Riemann Velocity: 0.2013
Max curvature: 0.0453
740
720
700
680
660
640
620
600
540
560
580
600
620

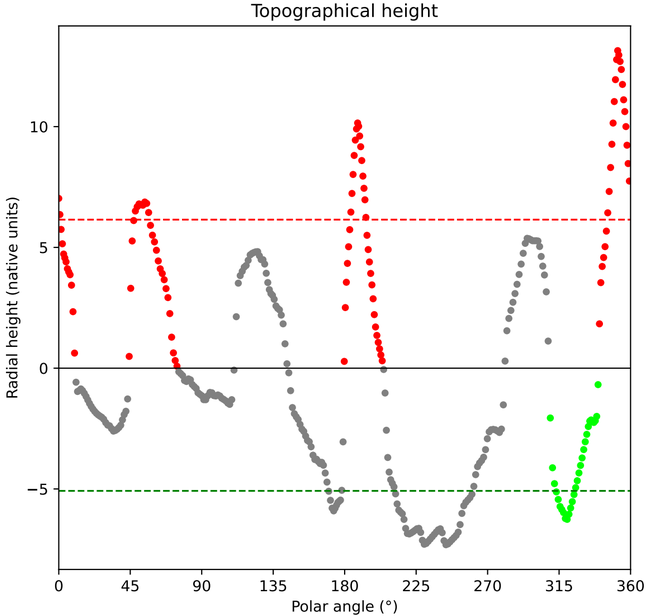

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

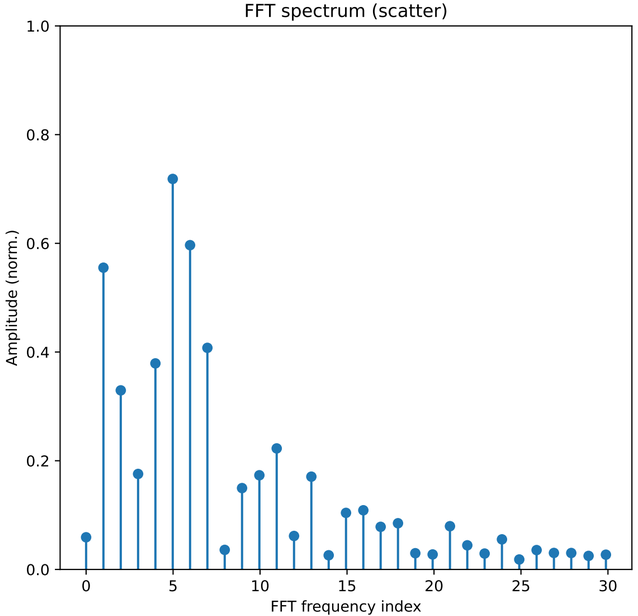

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

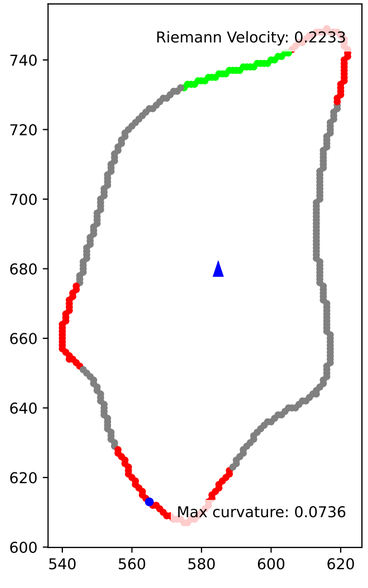

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

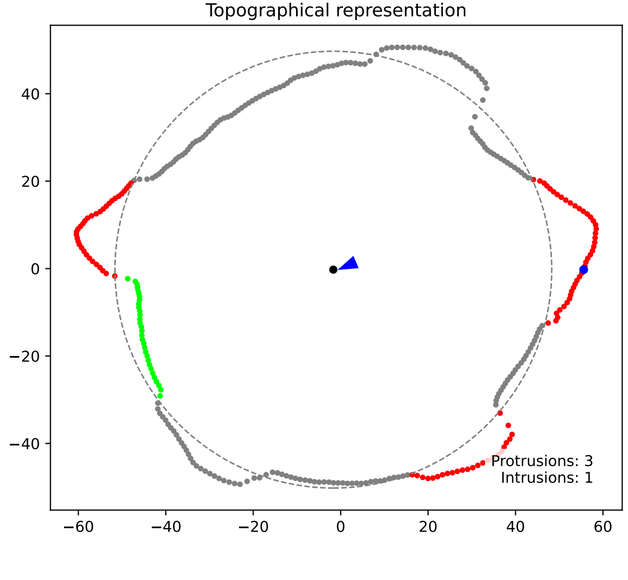

Shape evolution (t = 35.00)
Riemann Velocity: 0.2275
Max curvature: 0.0569
740
720
700
680
660
640
620
600
540
560
580
600
620

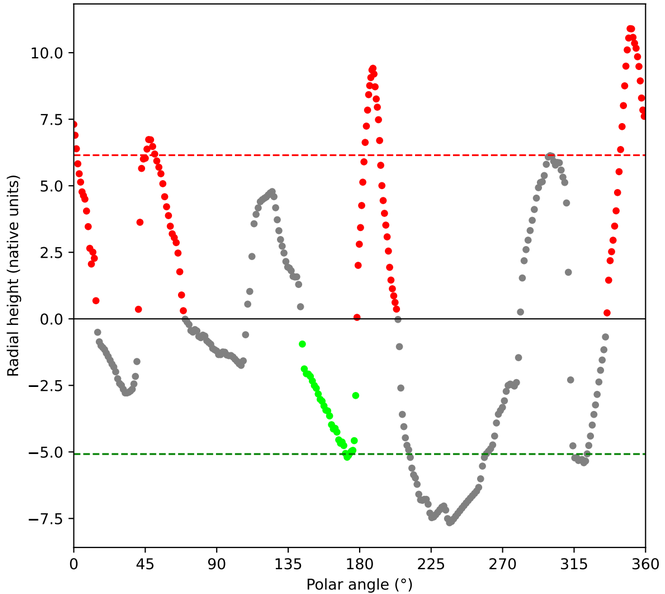

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

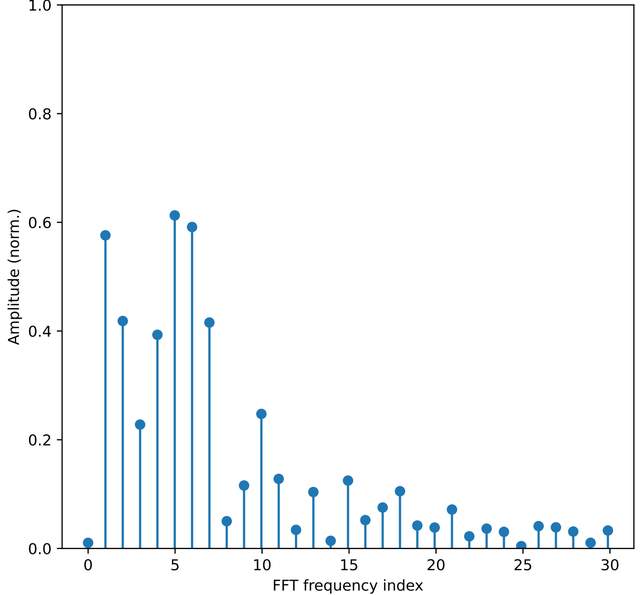

Topographical height
Radial height (native units)
Polar angle (°)
10
5
0
−5
0
45
90
135
180
225
270
315
360

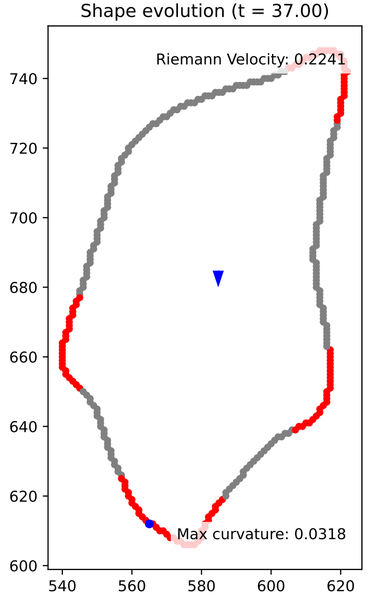

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

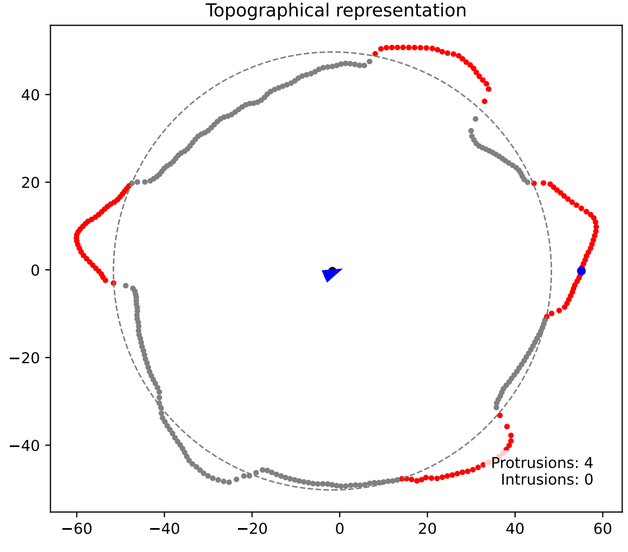

Shape evolution (t = 36.00)
Riemann Velocity: 0.2233
Max curvature: 0.0736
740
720
700
680
660
640
620
600
540
560
580
600
620

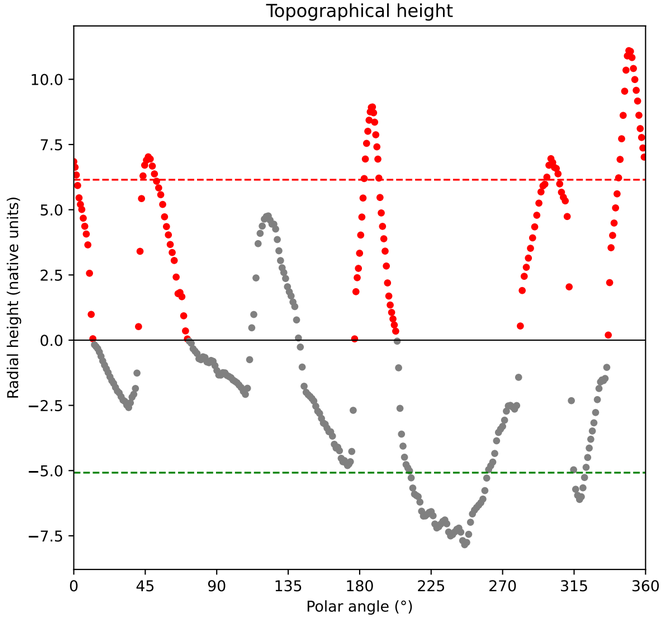

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

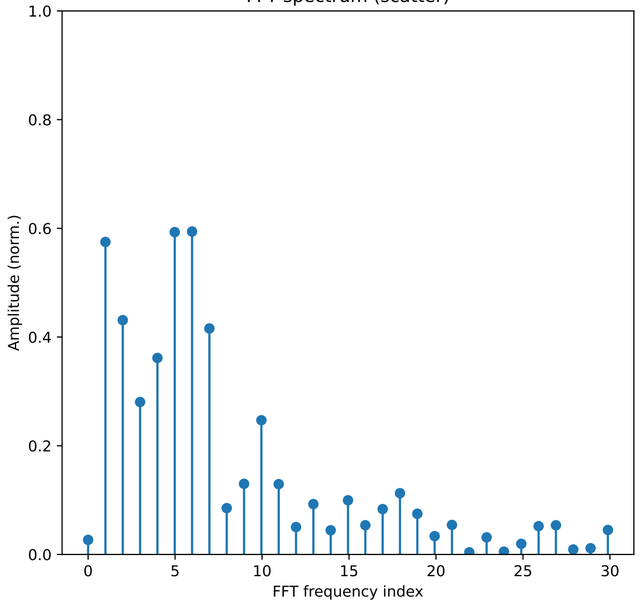

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

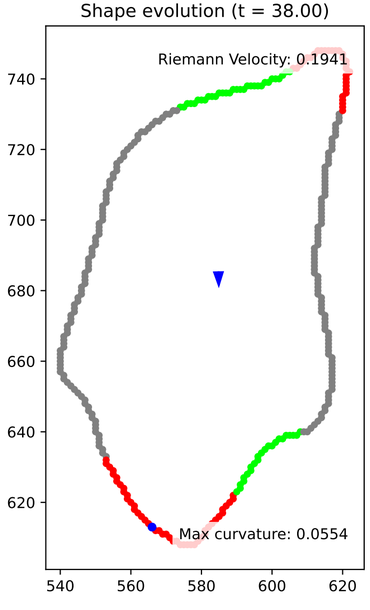

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

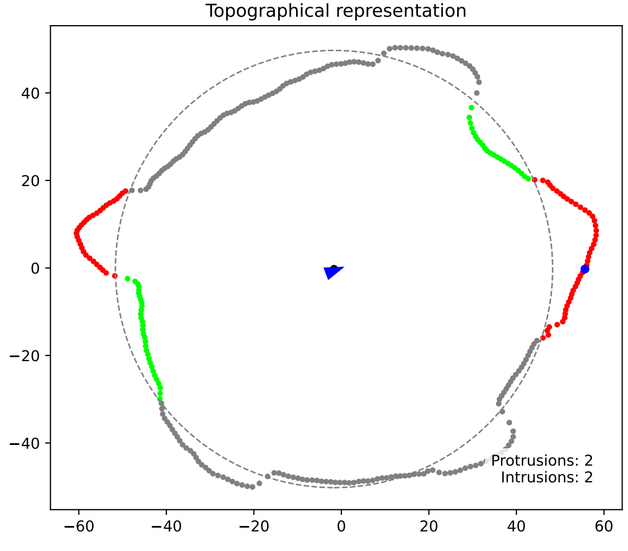

Shape evolution (t = 37.00)
Riemann Velocity: 0.2241
Max curvature: 0.0318
740
720
700
680
660
640
620
600
540
560
580
600
620

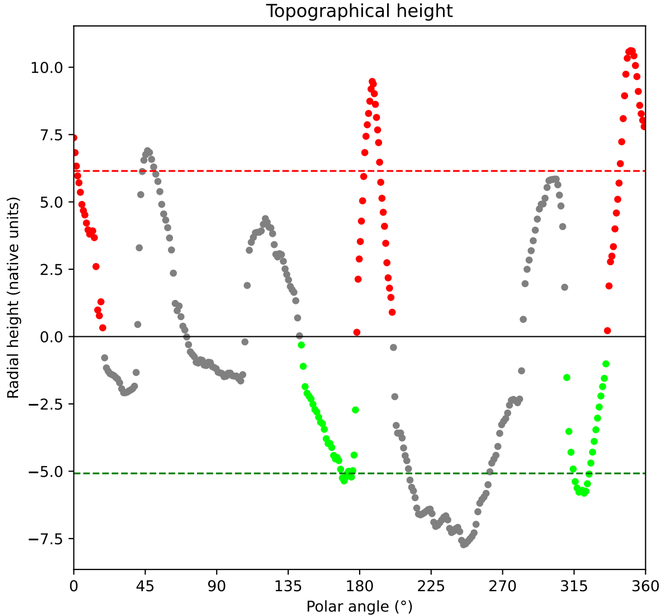

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

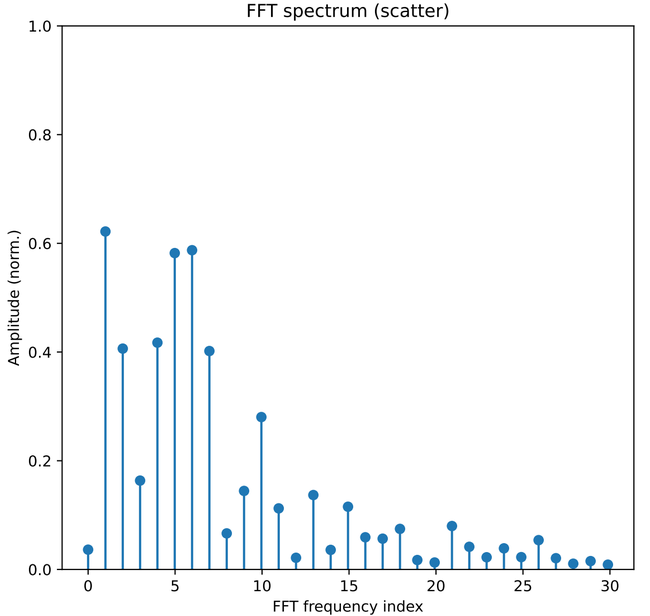

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

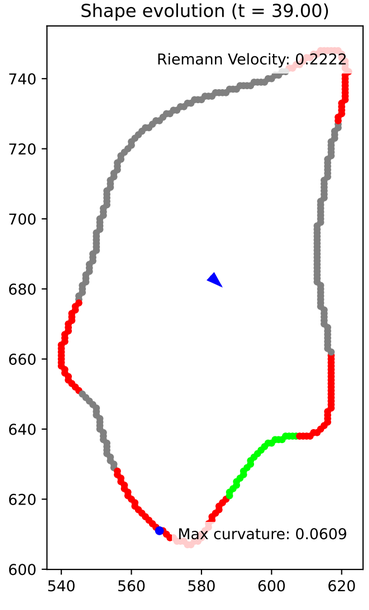

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

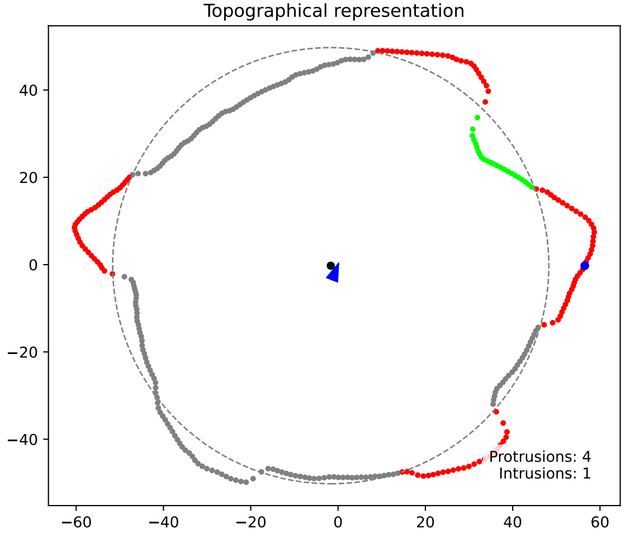

Shape evolution (t = 38.00)
Riemann Velocity: 0.1941
Max curvature: 0.0554
740
720
700
680
660
640
620
540
560
580
600
620

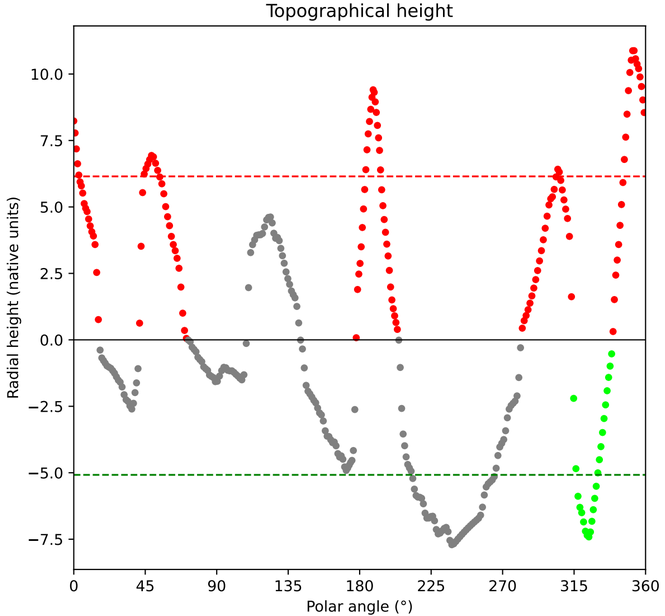

Topographical representation
Protrusions: 2
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

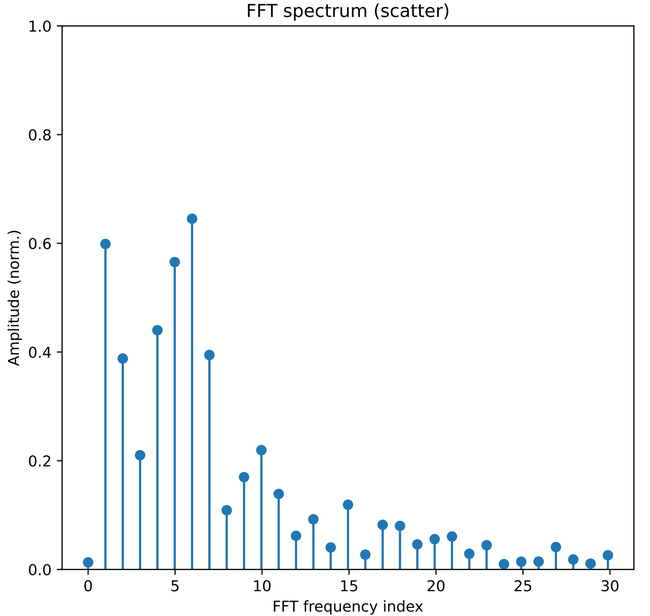

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

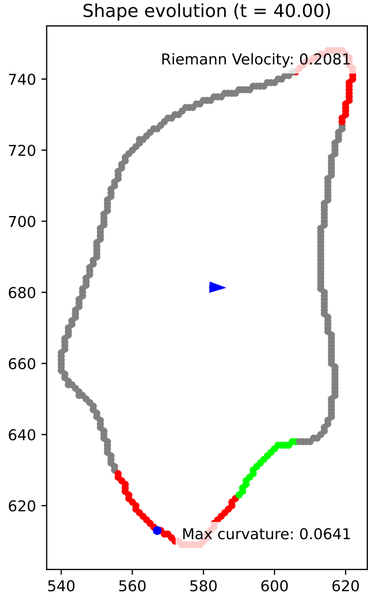

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

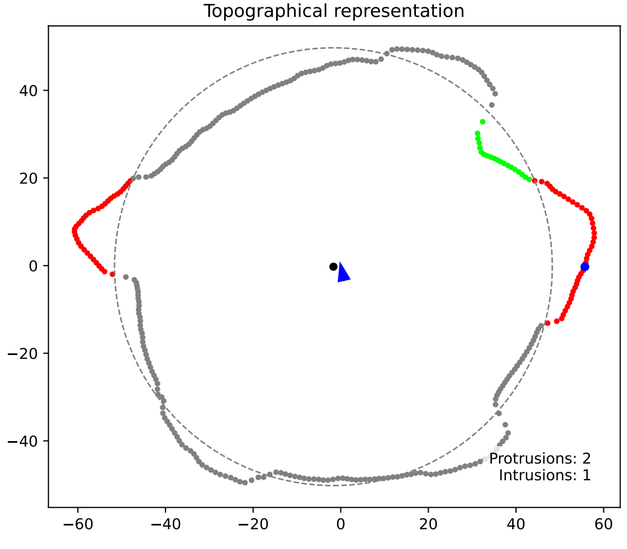

Shape evolution (t = 39.00)
Riemann Velocity: 0.2222
Max curvature: 0.0609
740
720
700
680
660
640
620
600
540
560
580
600
620

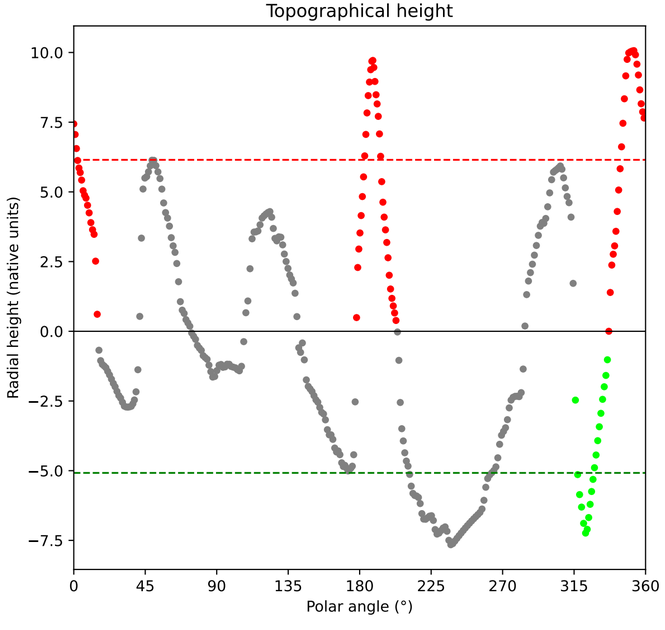

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

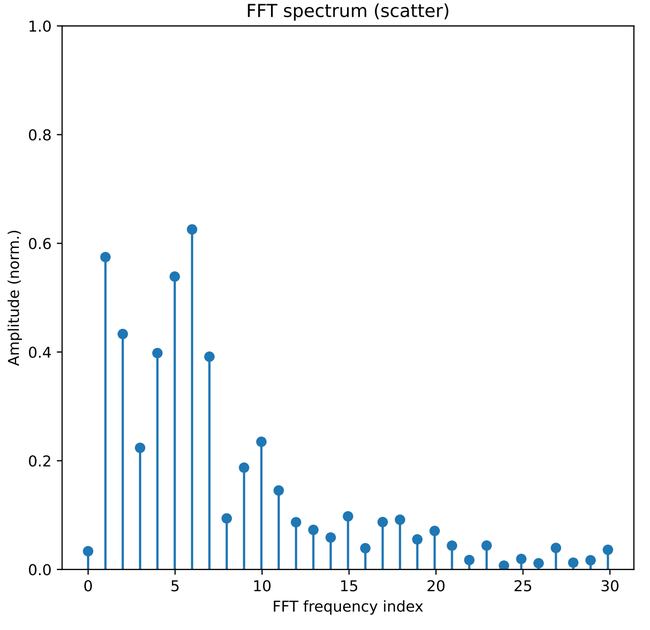

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

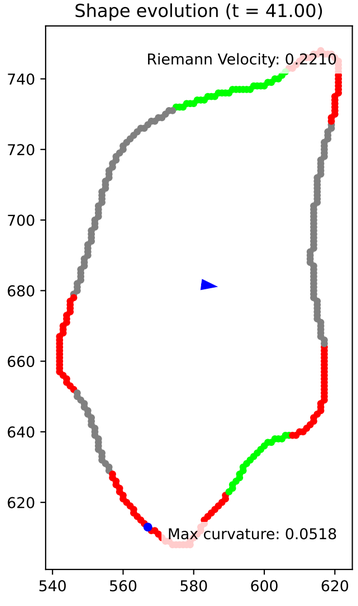

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

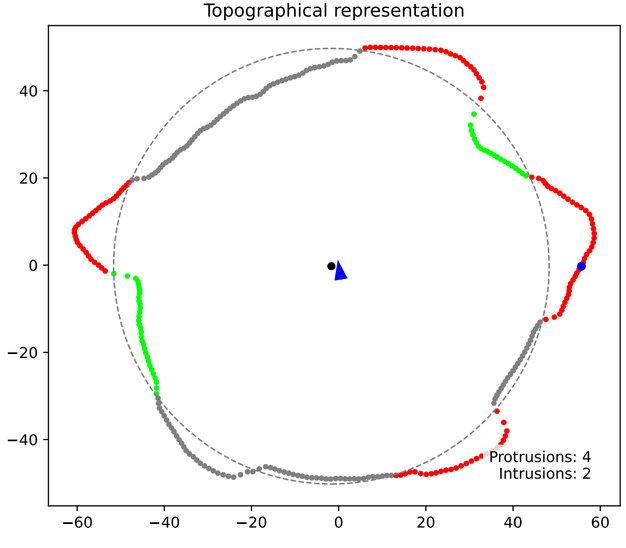

Shape evolution (t = 40.00)
Riemann Velocity: 0.2081
Max curvature: 0.0641
740
720
700
680
660
640
620
540
560
580
600
620

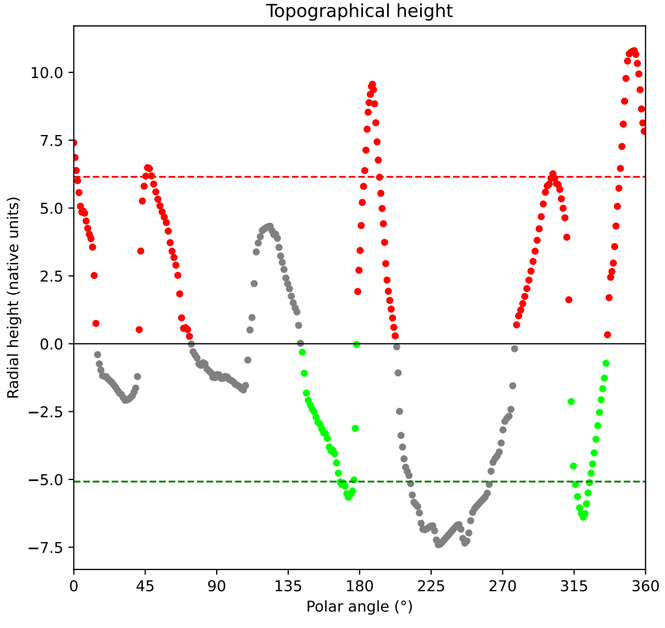

Topographical representation
Protrusions: 2
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

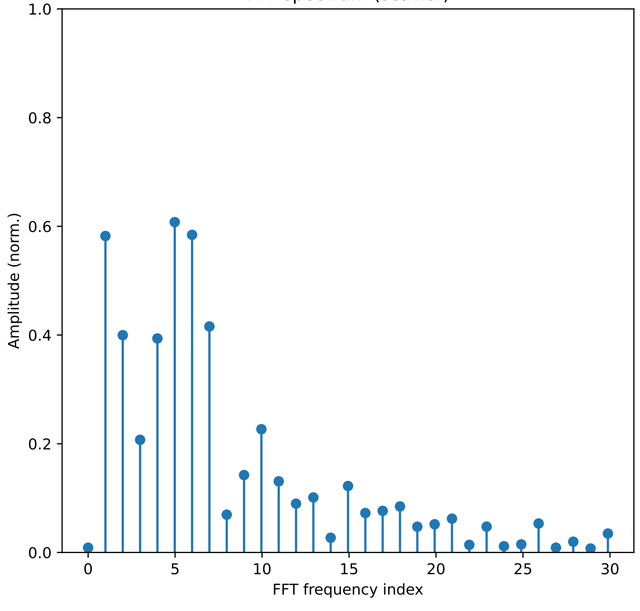

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

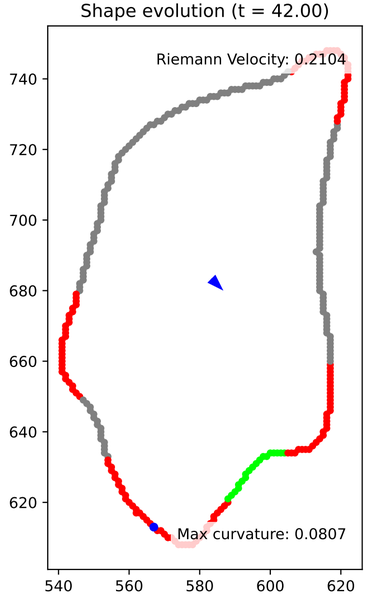

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

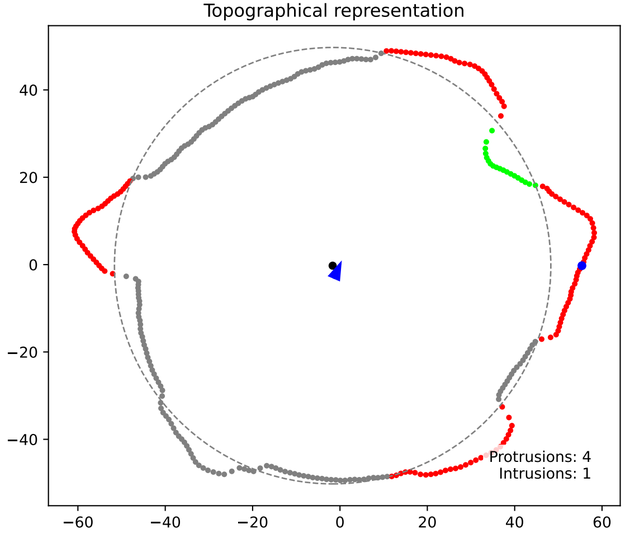

Shape evolution (t = 41.00)
Riemann Velocity: 0.2210
Max curvature: 0.0518
740
720
700
680
660
640
620
540
560
580
600
620

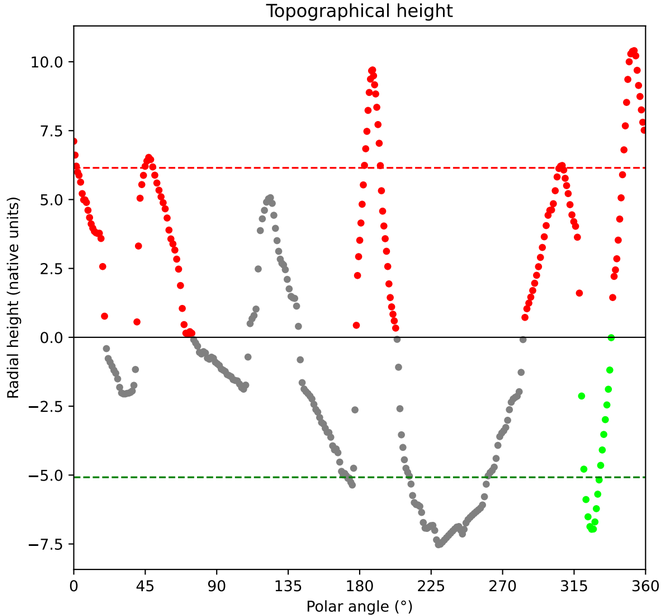

Topographical representation
Protrusions: 4
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

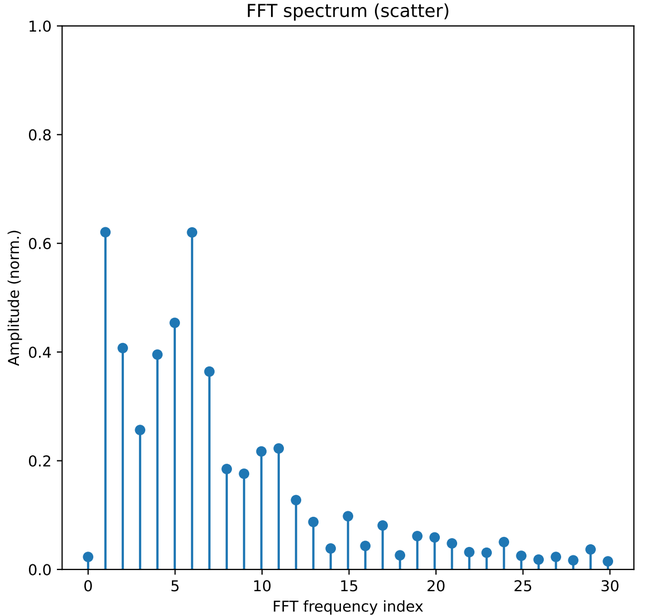

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

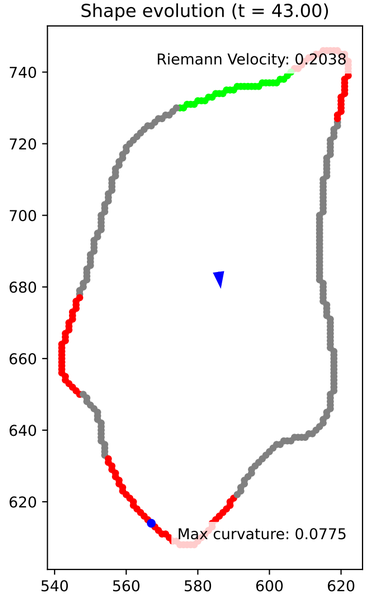

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

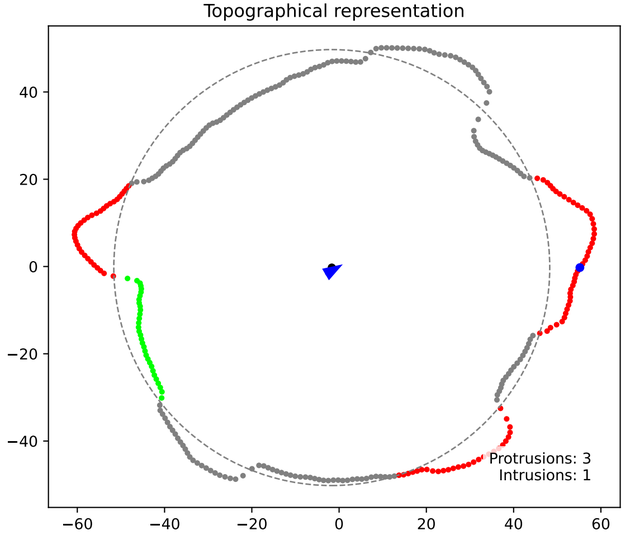

Shape evolution (t = 42.00)
Riemann Velocity: 0.2104
Max curvature: 0.0807
740
720
700
680
660
640
620
540
560
580
600
620

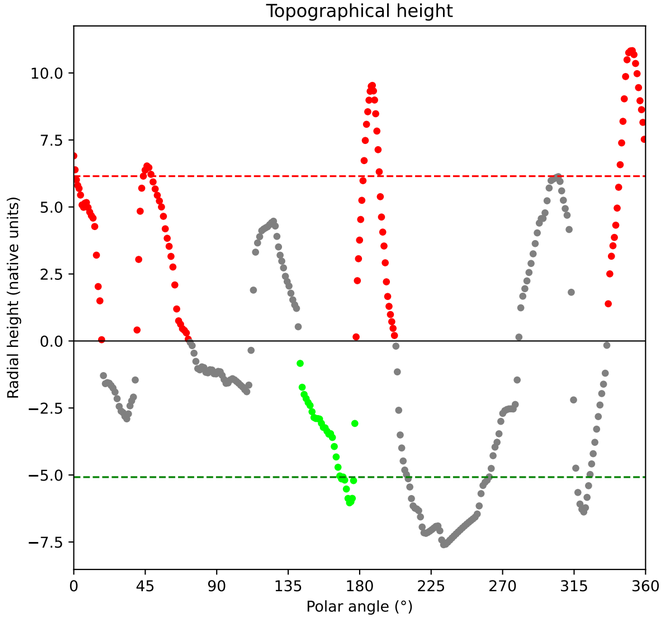

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

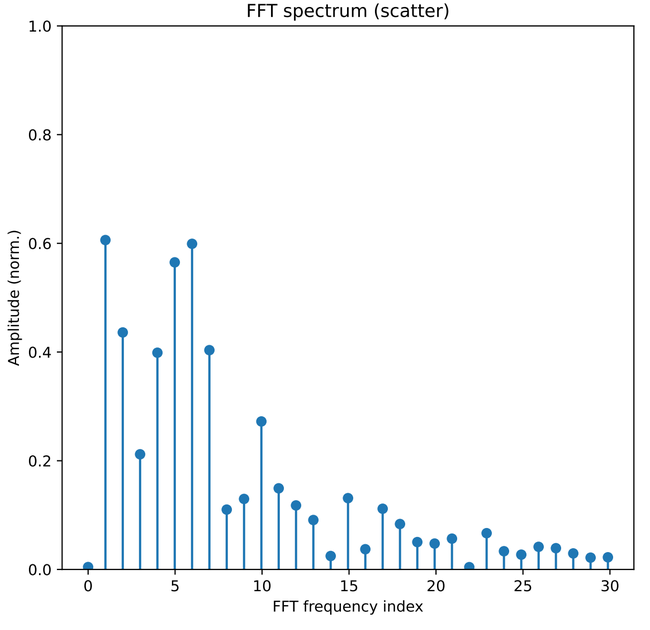

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

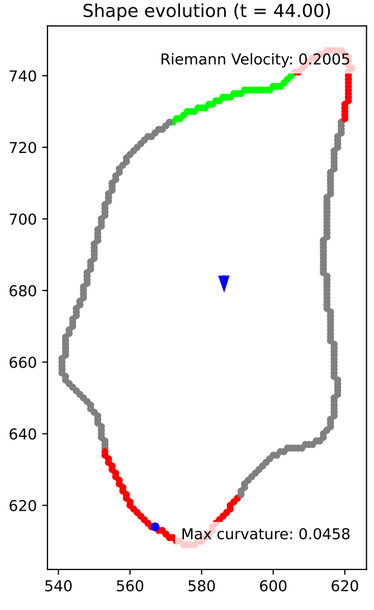

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

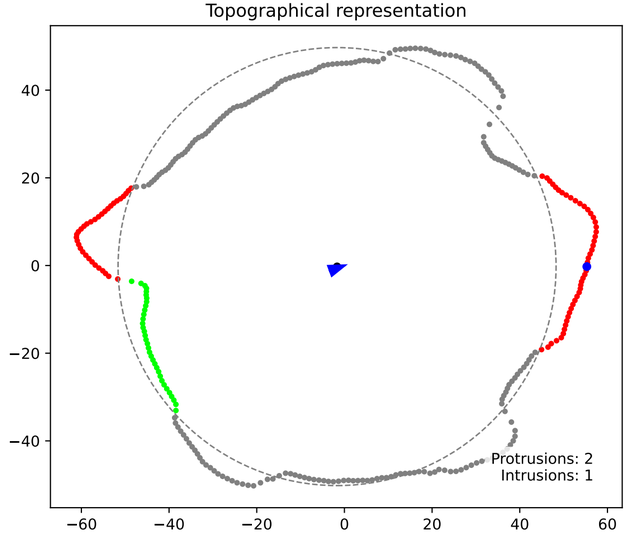

Shape evolution (t = 43.00)
Riemann Velocity: 0.2038
Max curvature: 0.0775
740
720
700
680
660
640
620
540
560
580
600
620

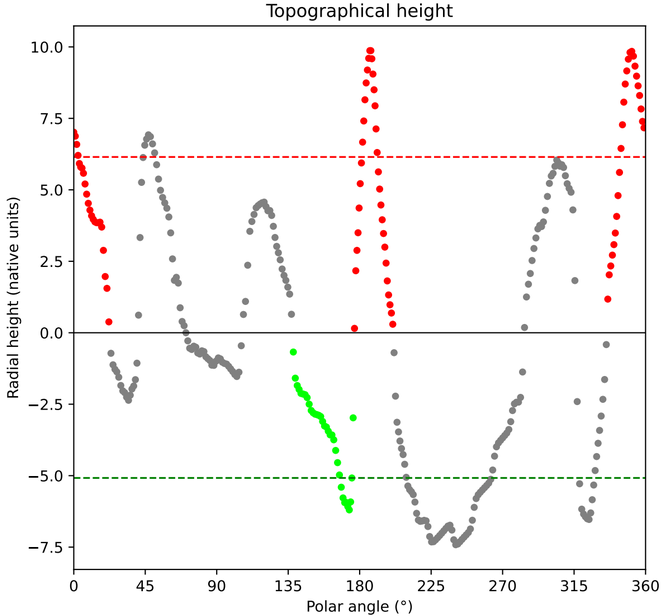

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

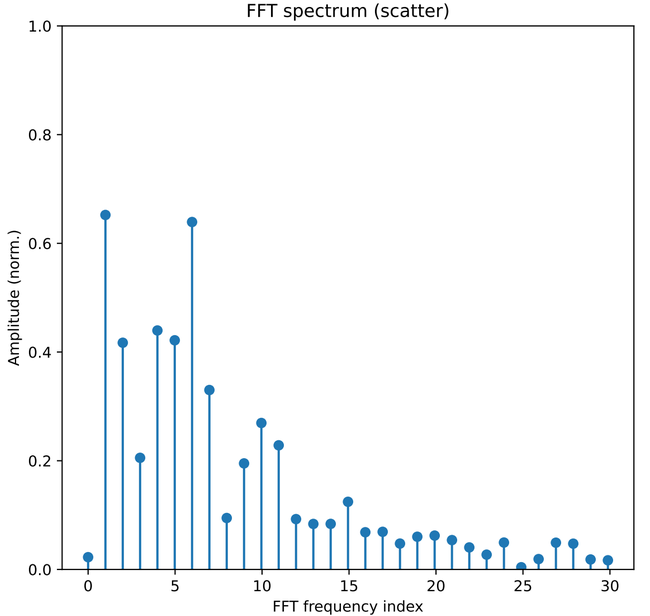

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

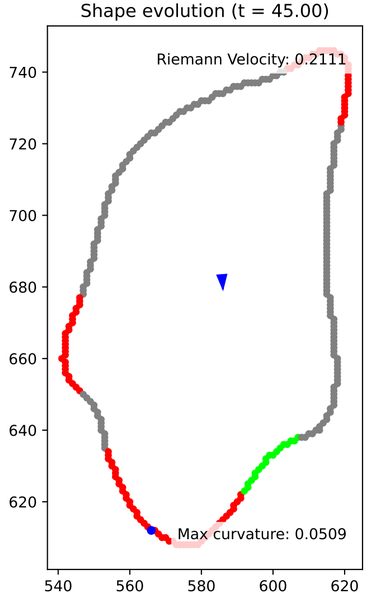

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

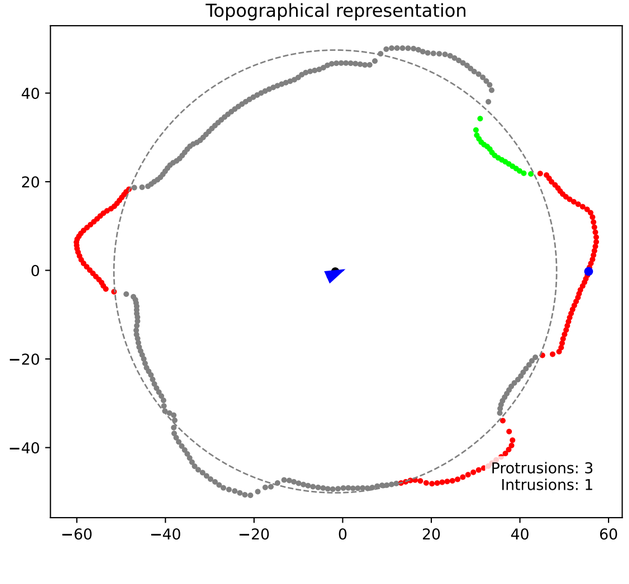

Shape evolution (t = 44.00)
Riemann Velocity: 0.2005
Max curvature: 0.0458
740
720
700
680
660
640
620
540
560
580
600
620

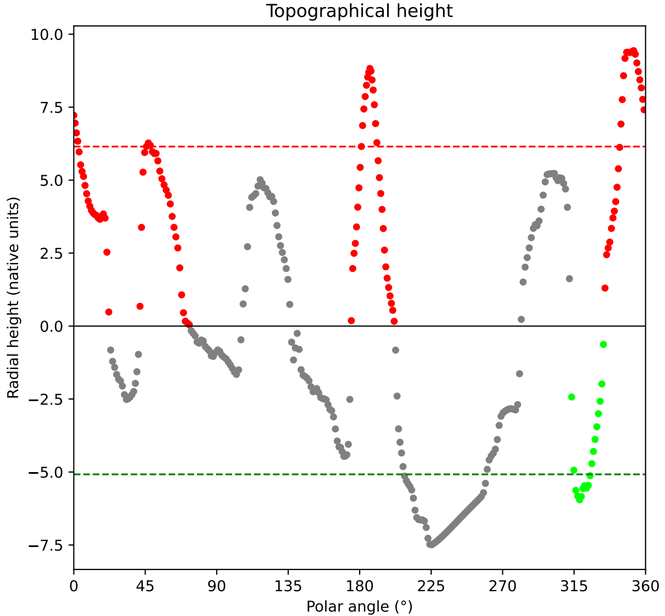

Topographical representation
Protrusions: 2
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

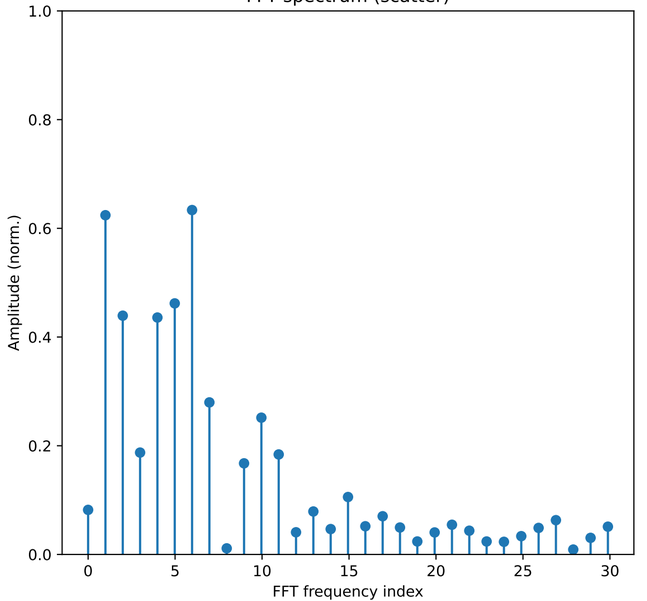

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

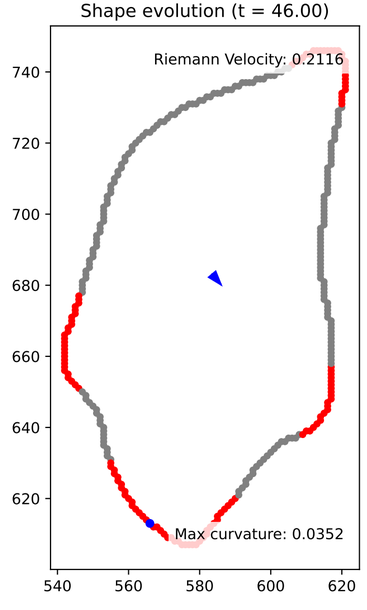

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

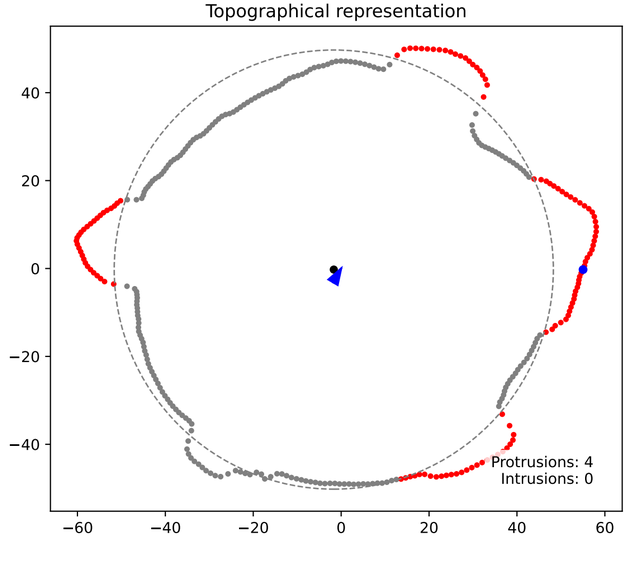

Shape evolution (t = 45.00)
Riemann Velocity: 0.2111
Max curvature: 0.0509
740
720
700
680
660
640
620
540
560
580
600
620

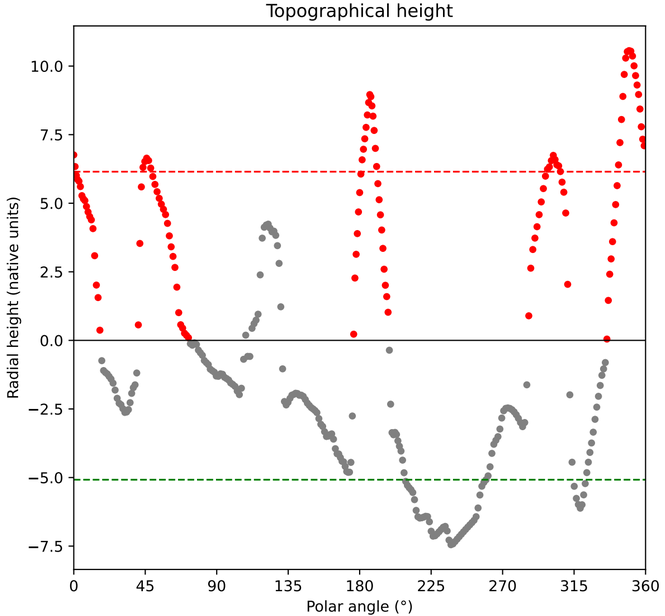

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

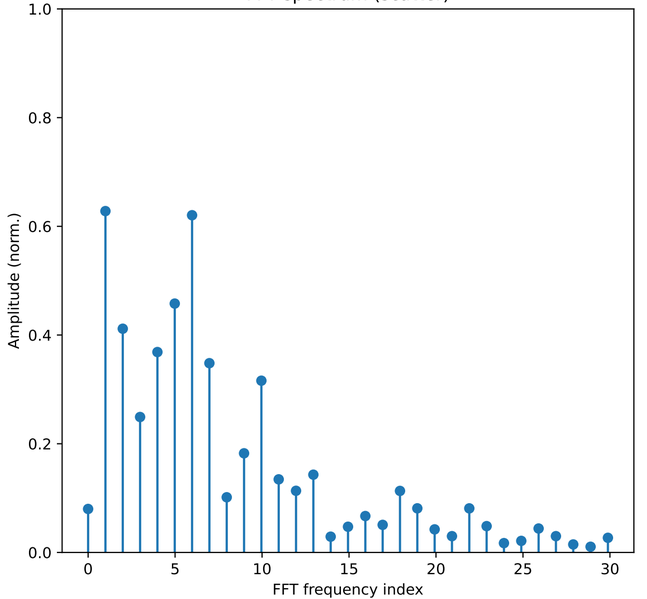

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

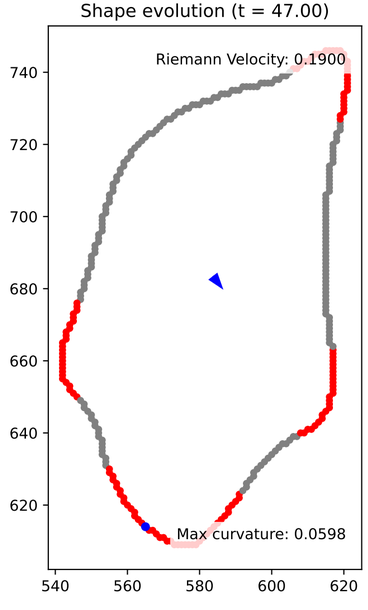

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

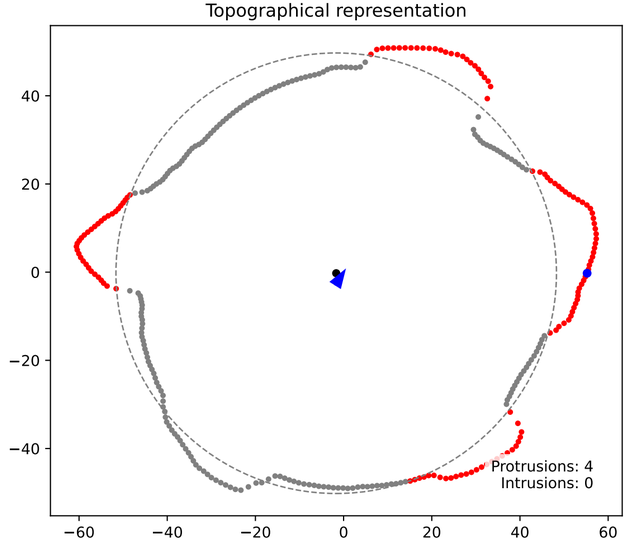

Shape evolution (t = 46.00)
Riemann Velocity: 0.2116
Max curvature: 0.0352
740
720
700
680
660
640
620
540
560
580
600
620

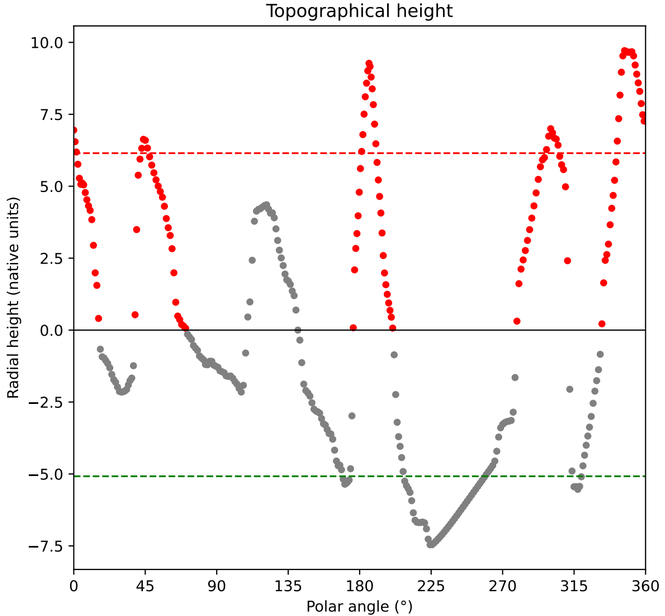

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

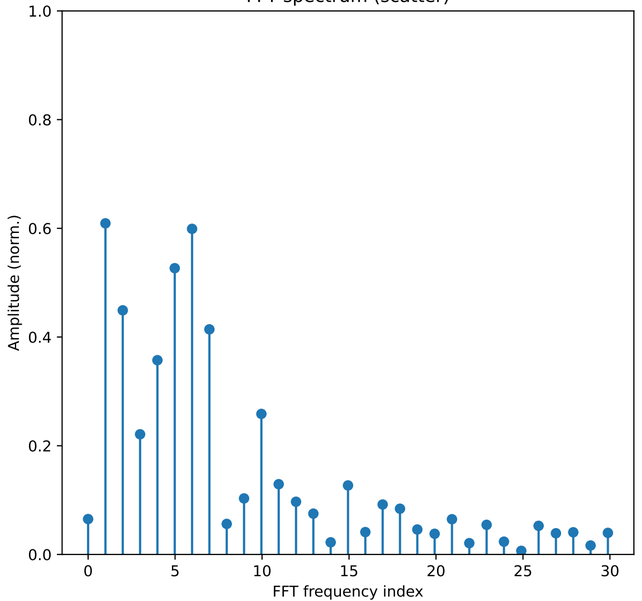

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

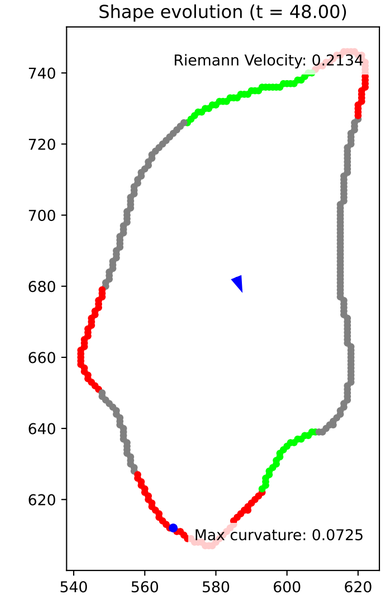

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

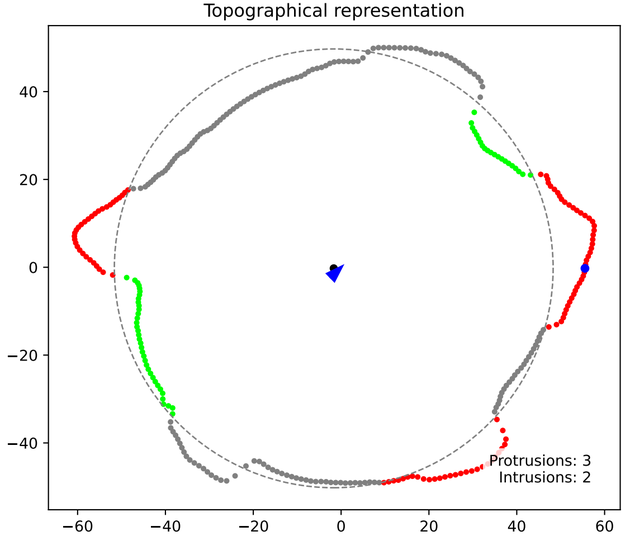

Shape evolution (t = 47.00)
Riemann Velocity: 0.1900
Max curvature: 0.0598
740
720
700
680
660
640
620
540
560
580
600
620

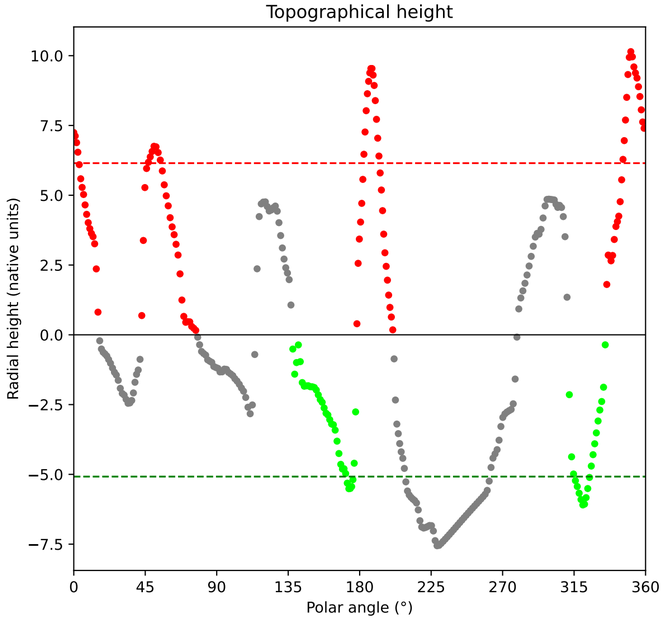

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

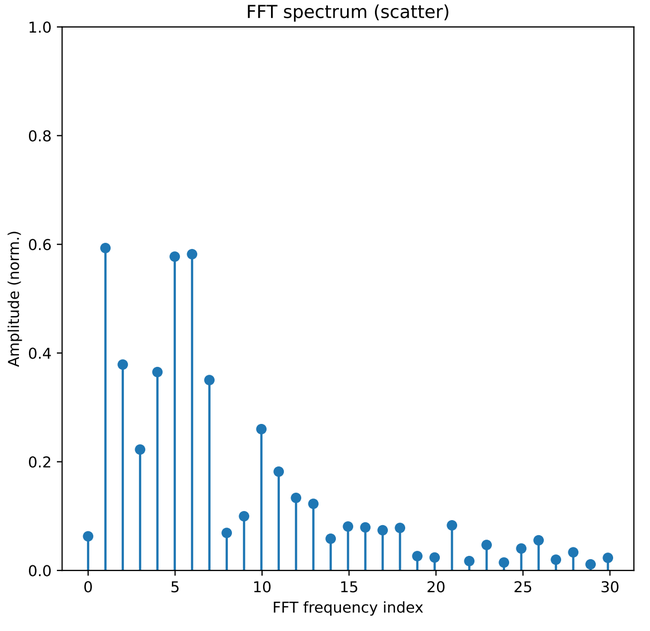

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

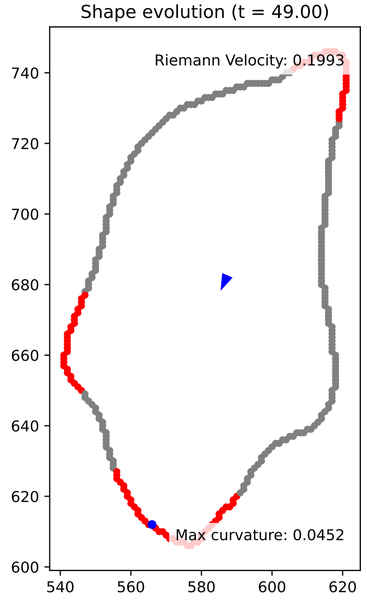

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

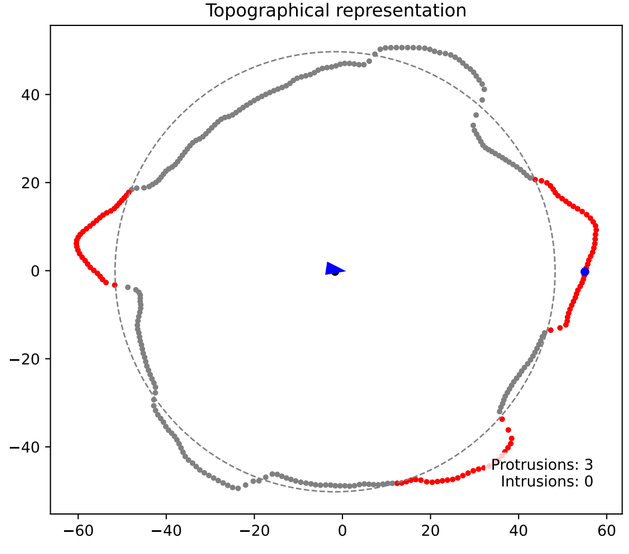

Shape evolution (t = 48.00)
Riemann Velocity: 0.2134
Max curvature: 0.0725
740
720
700
680
660
640
620
540
560
580
600
620

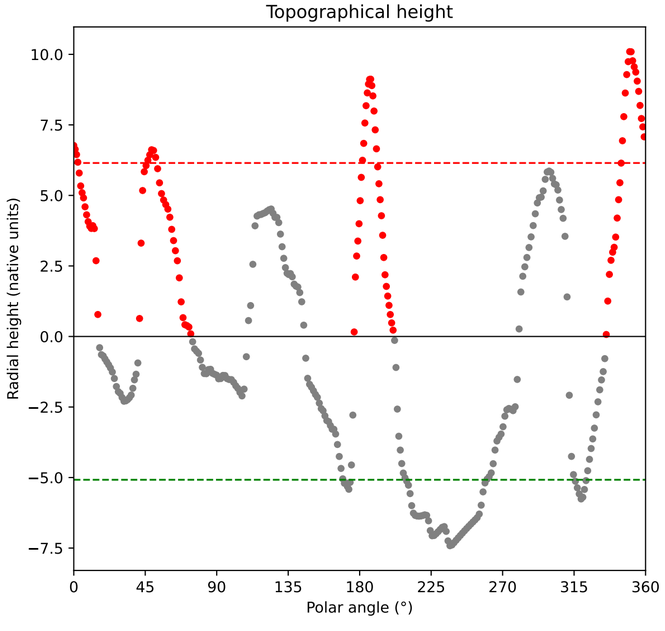

Topographical representation
Protrusions: 3
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

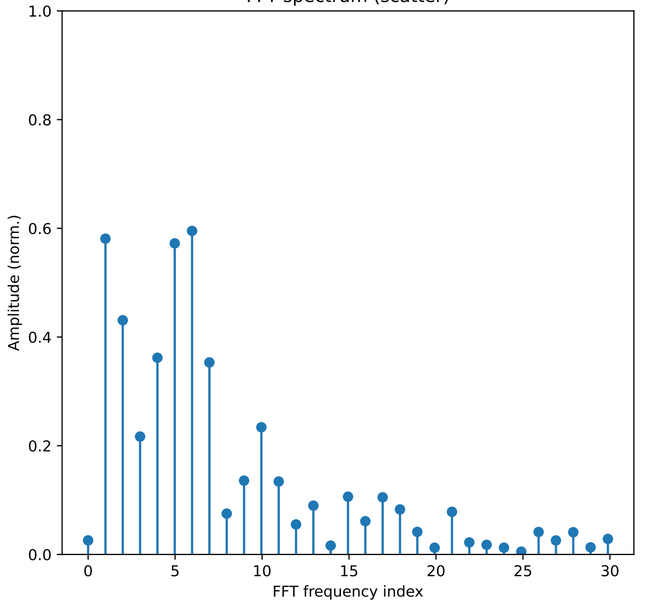

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

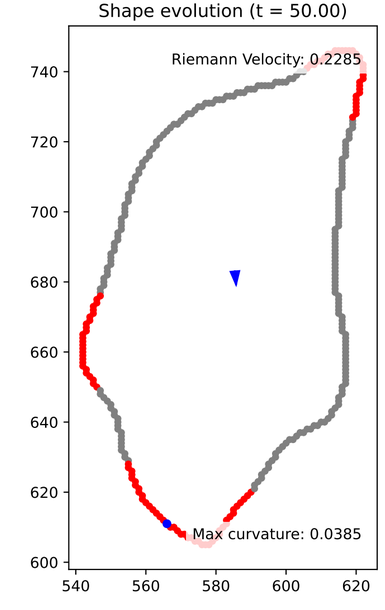

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

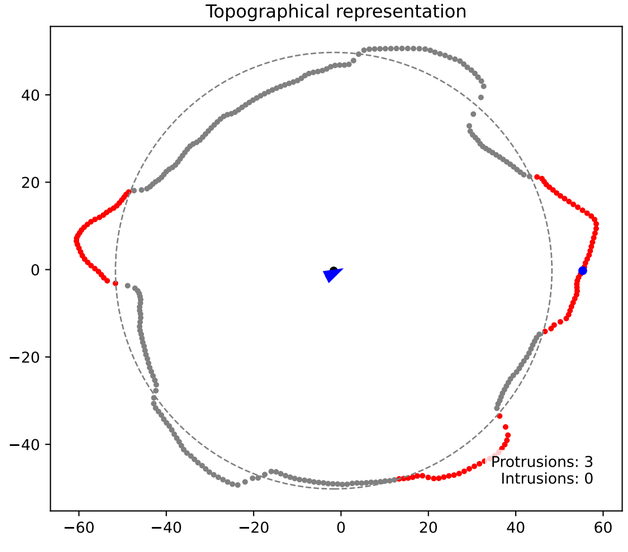

Shape evolution (t = 49.00)
Riemann Velocity: 0.1993
Max curvature: 0.0452
740
720
700
680
660
640
620
600
540
560
580
600
620

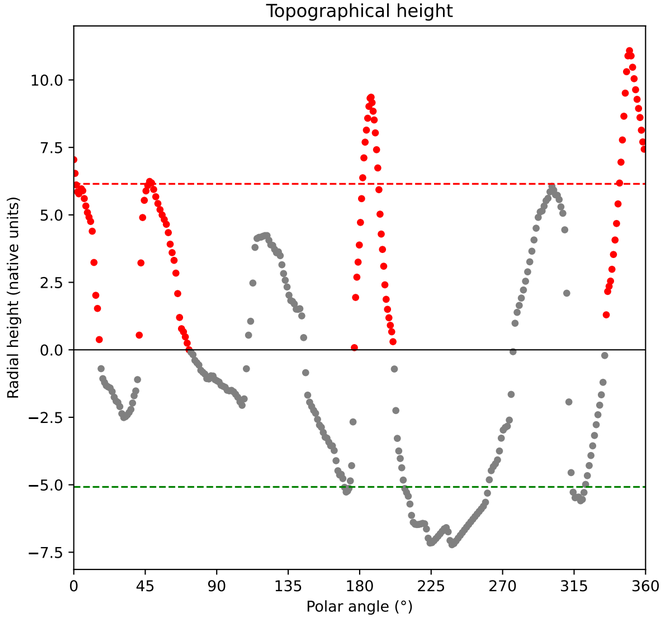

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

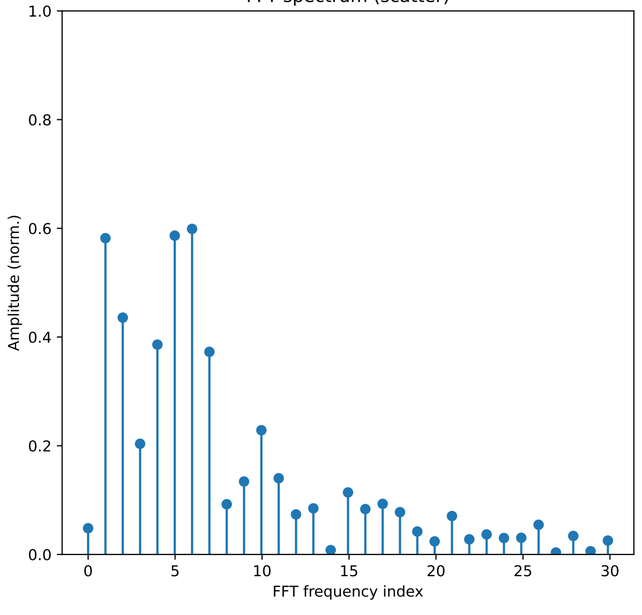

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

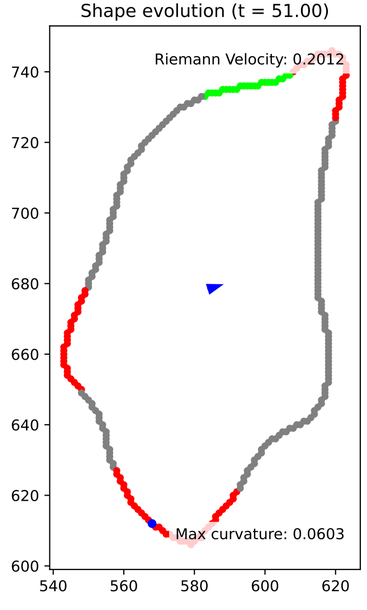

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

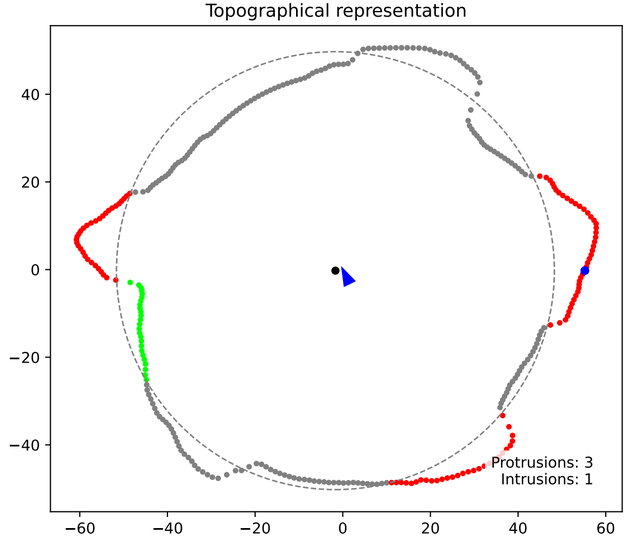

Shape evolution (t = 50.00)
Riemann Velocity: 0.2285
Max curvature: 0.0385
740
720
700
680
660
640
620
600
540
560
580
600
620

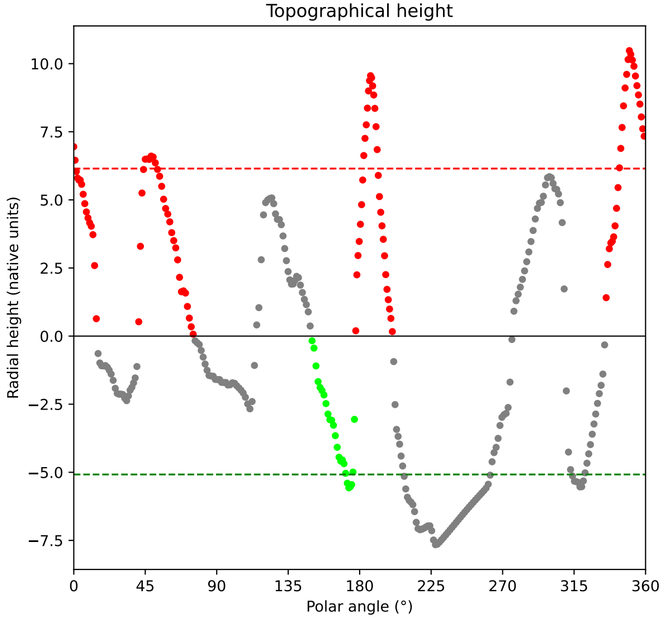

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

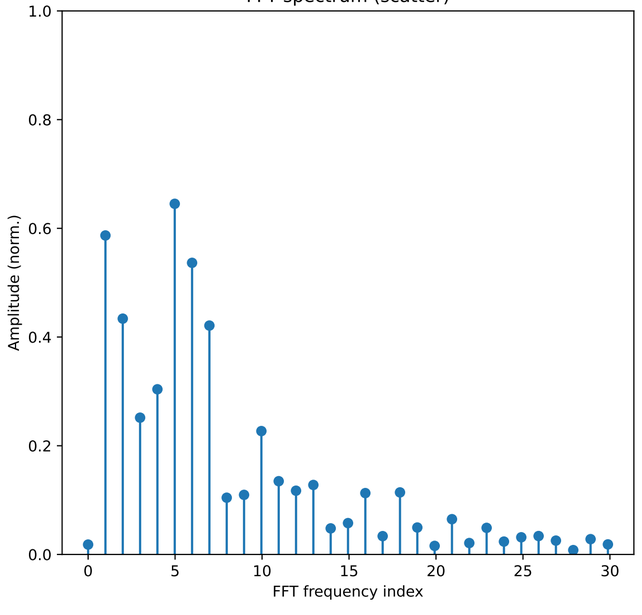

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

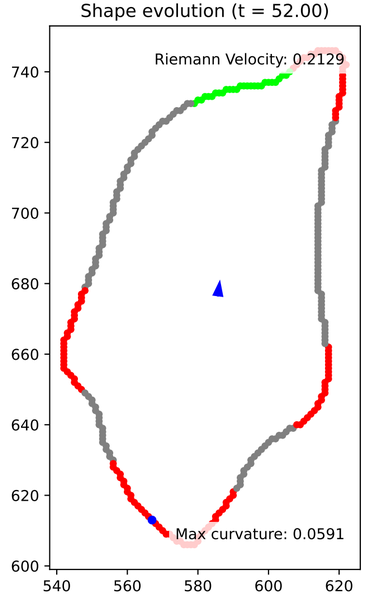

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

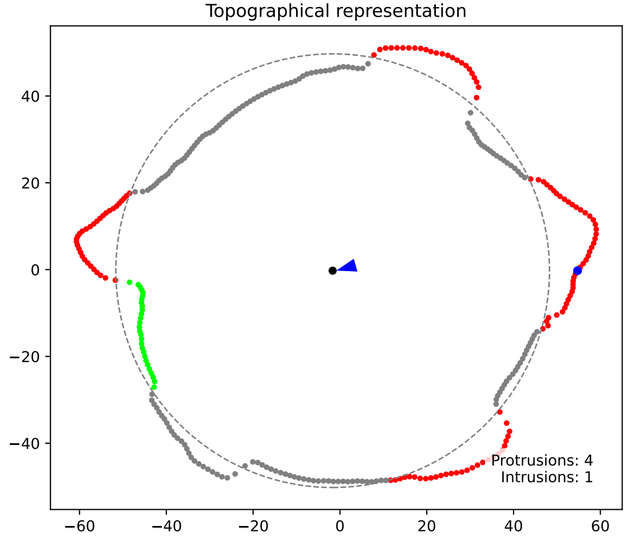

Shape evolution (t = 51.00)
Riemann Velocity: 0.2012
Max curvature: 0.0603
740
720
700
680
660
640
620
600
540
560
580
600
620

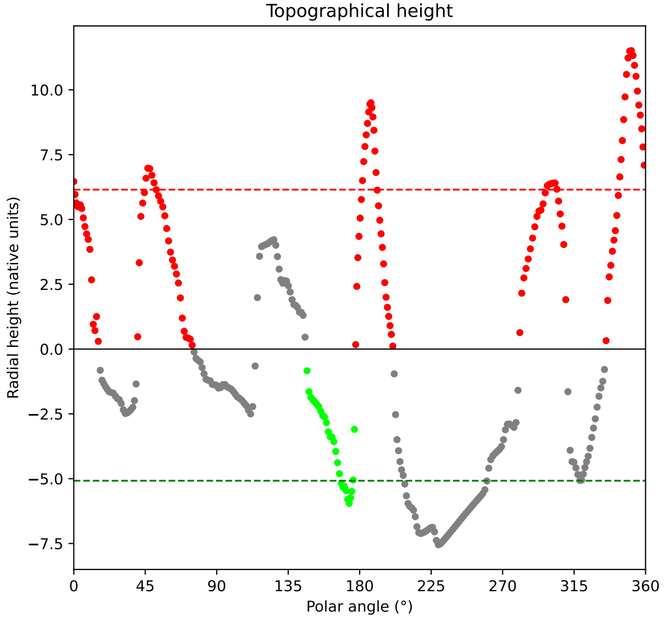

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

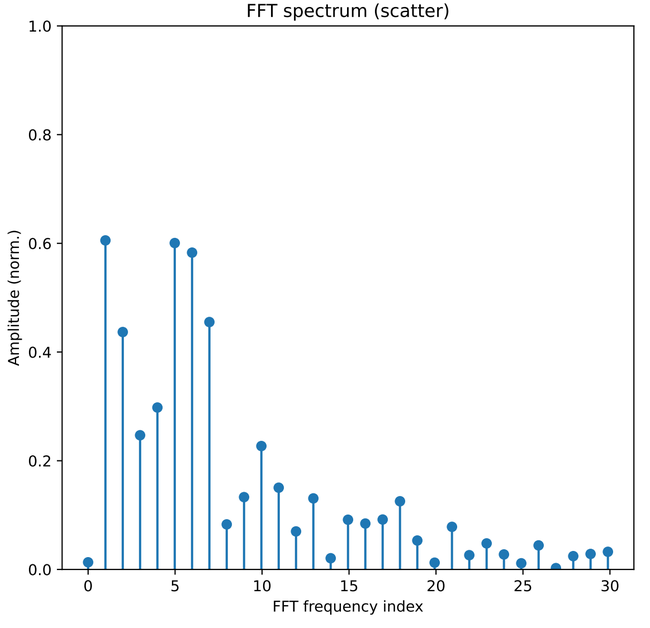

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

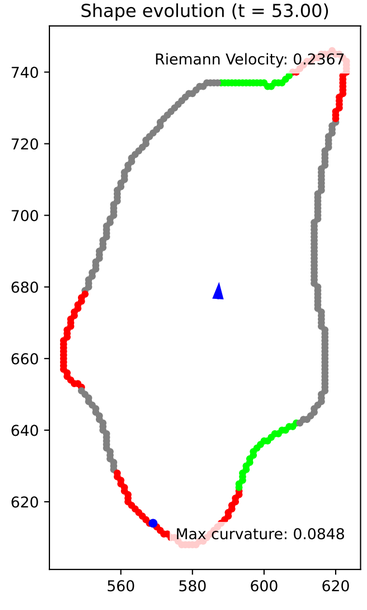

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

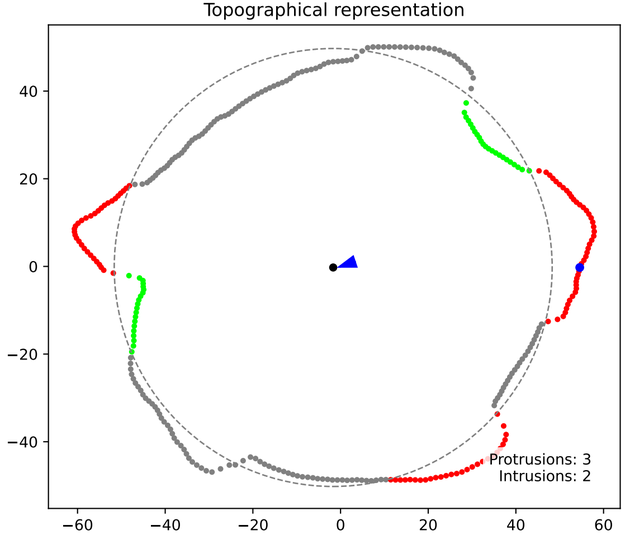

Shape evolution (t = 52.00)
Riemann Velocity: 0.2129
Max curvature: 0.0591
740
720
700
680
660
640
620
600
540
560
580
600
620

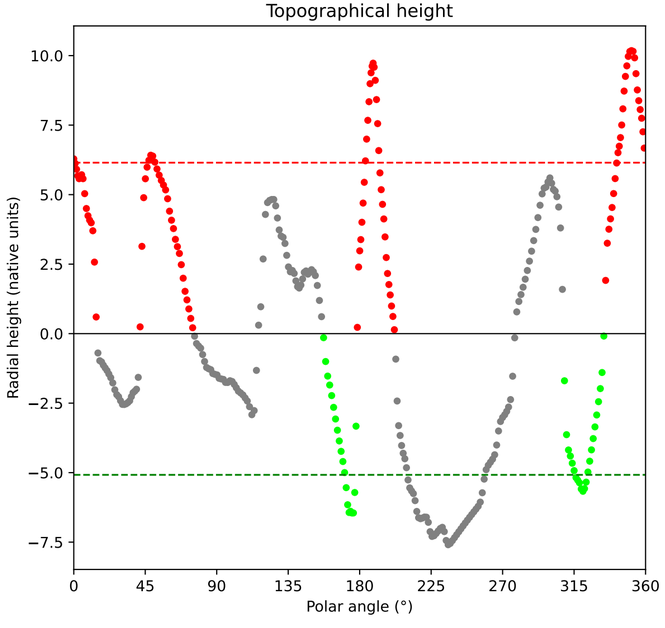

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

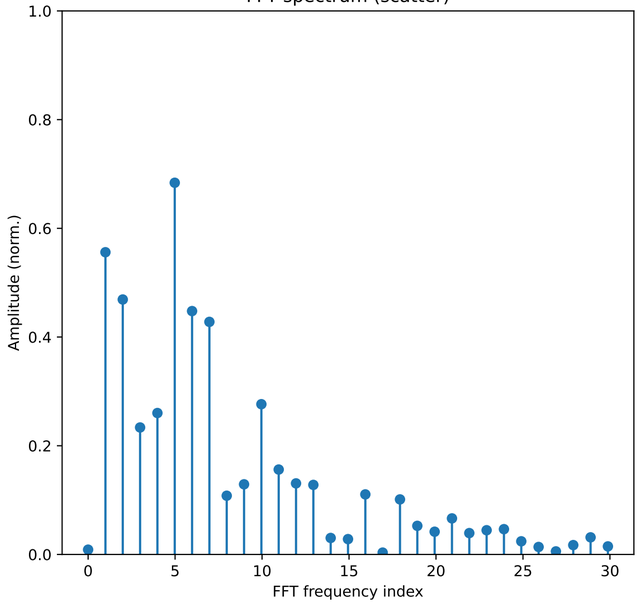

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

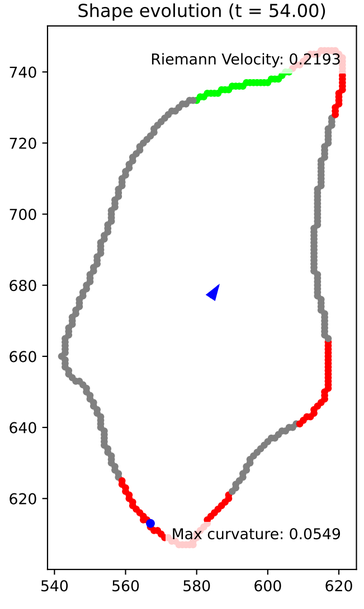

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

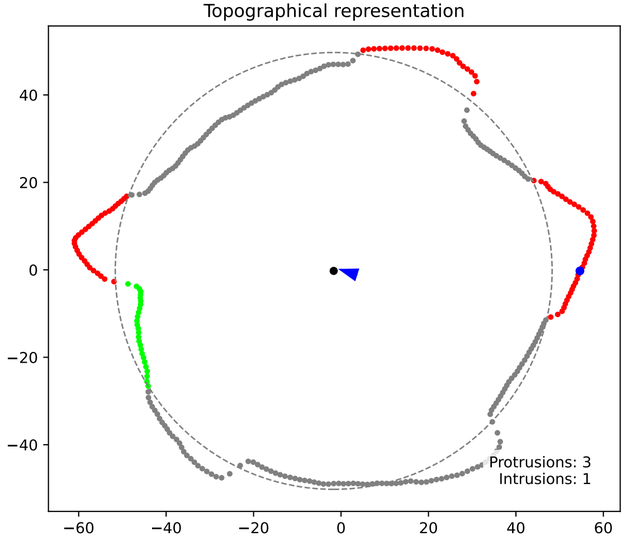

Shape evolution (t = 53.00)
Riemann Velocity: 0.2367
Max curvature: 0.0848
740
720
700
680
660
640
620
560
580
600
620

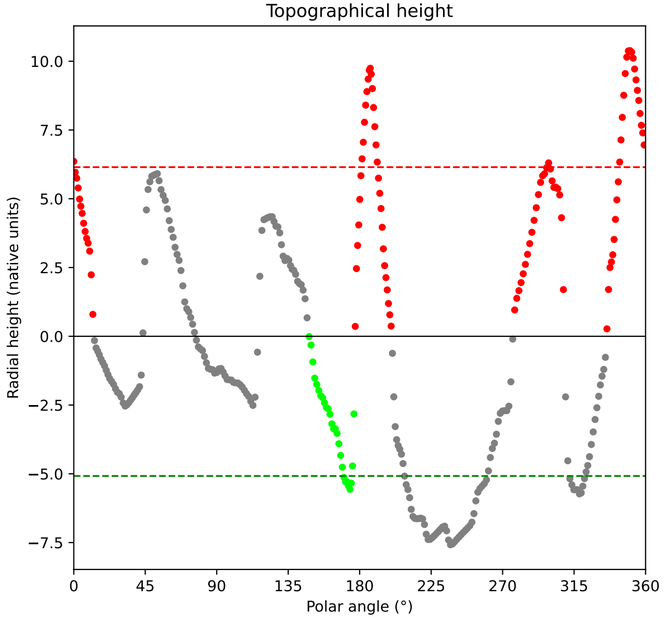

Topographical representation
Protrusions: 3
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

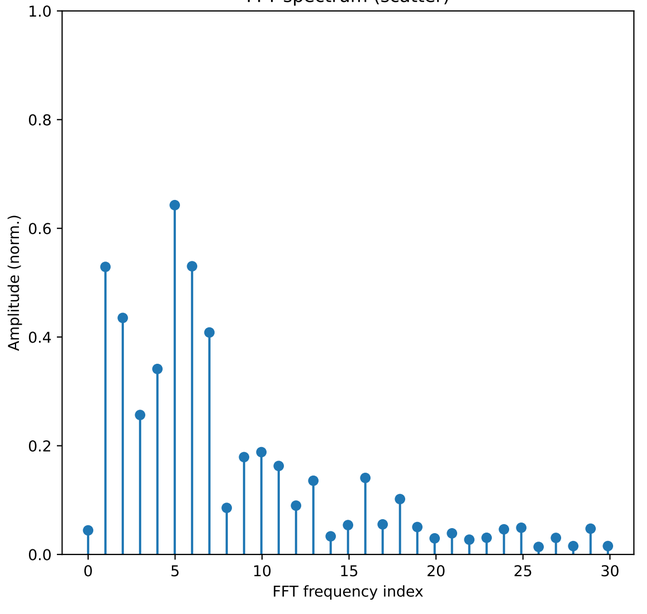

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

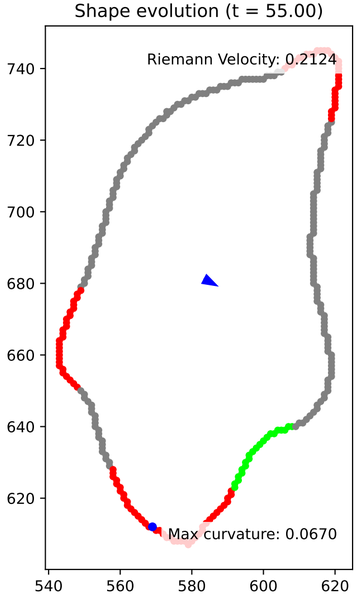

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

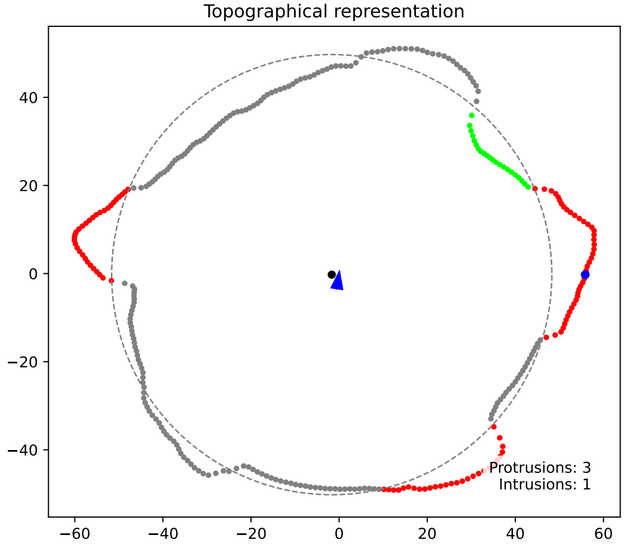

Shape evolution (t = 54.00)
Riemann Velocity: 0.2193
Max curvature: 0.0549
740
720
700
680
660
640
620
540
560
580
600
620

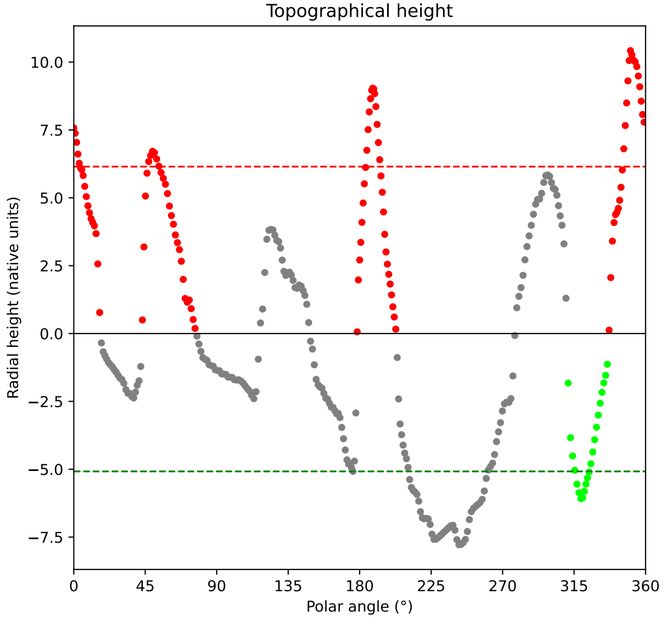

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

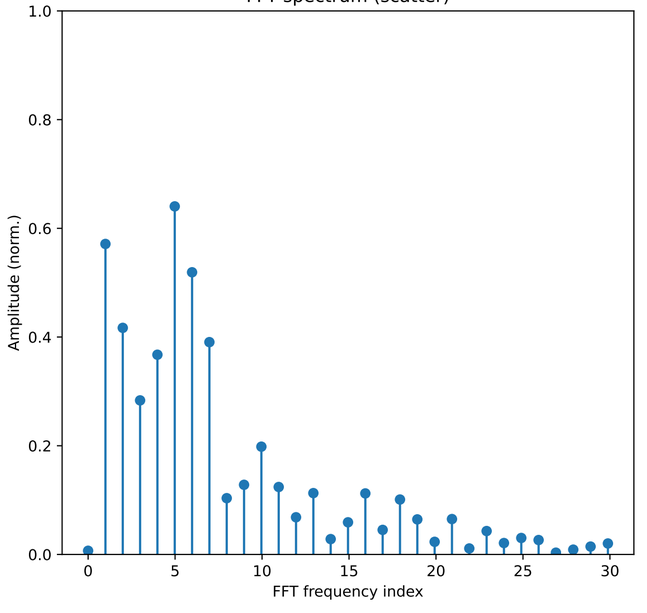

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

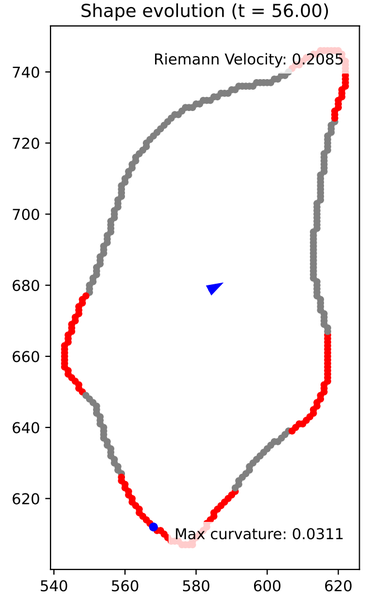

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

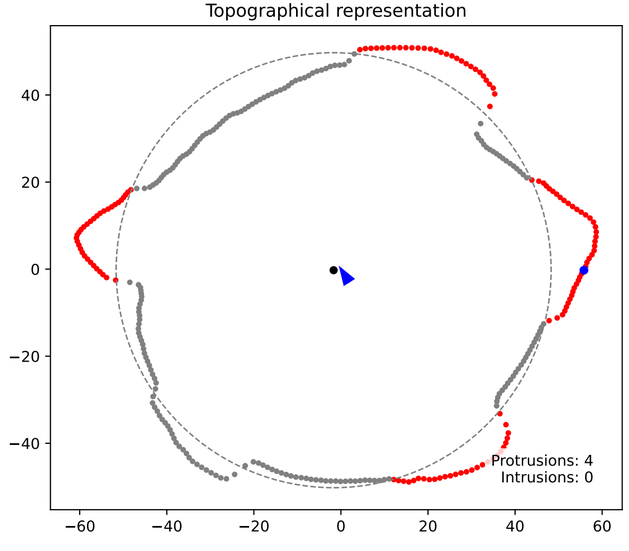

Shape evolution (t = 55.00)
Riemann Velocity: 0.2124
Max curvature: 0.0670
740
720
700
680
660
640
620
540
560
580
600
620

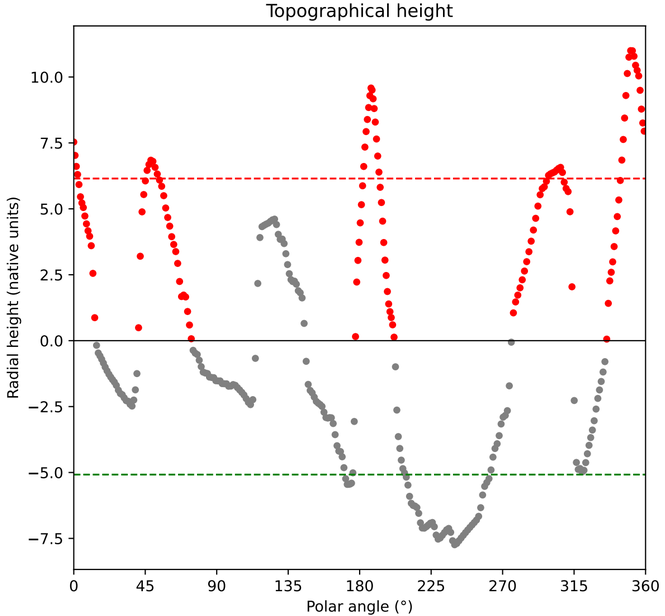

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

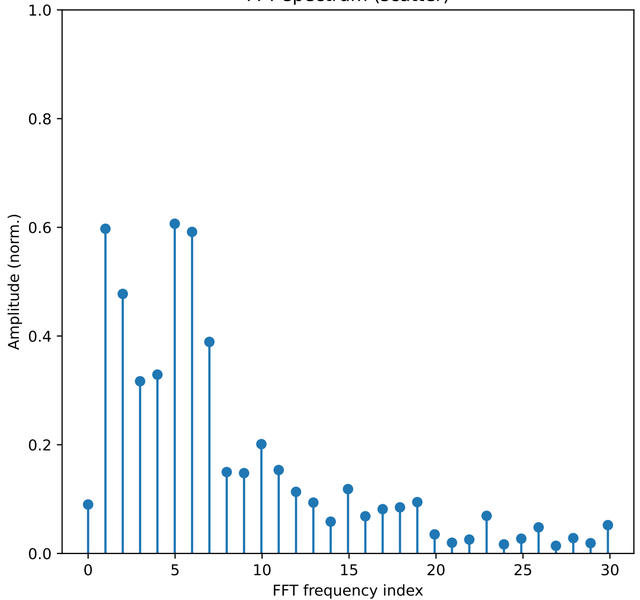

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

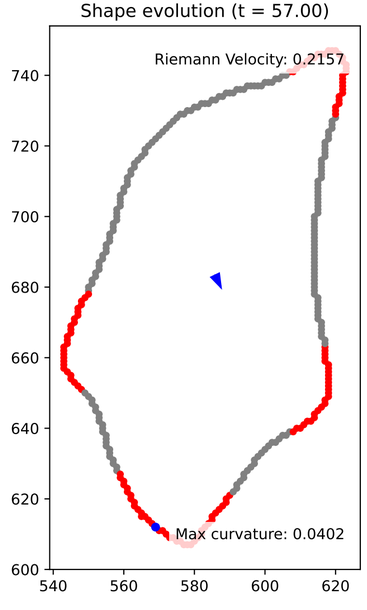

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

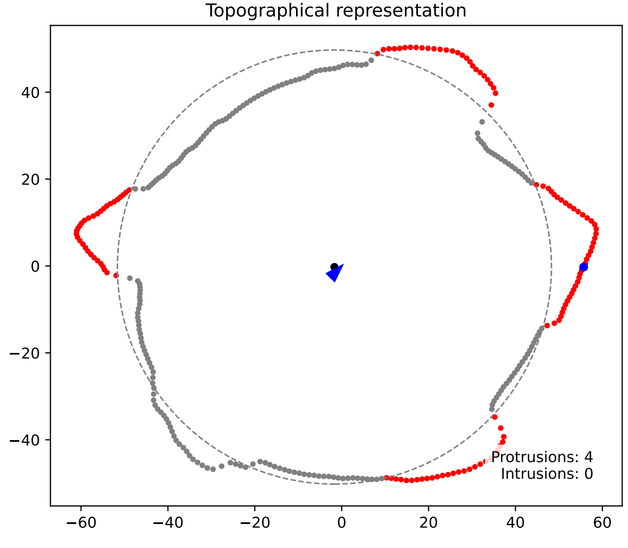

Shape evolution (t = 56.00)
Riemann Velocity: 0.2085
Max curvature: 0.0311
740
720
700
680
660
640
620
540
560
580
600
620

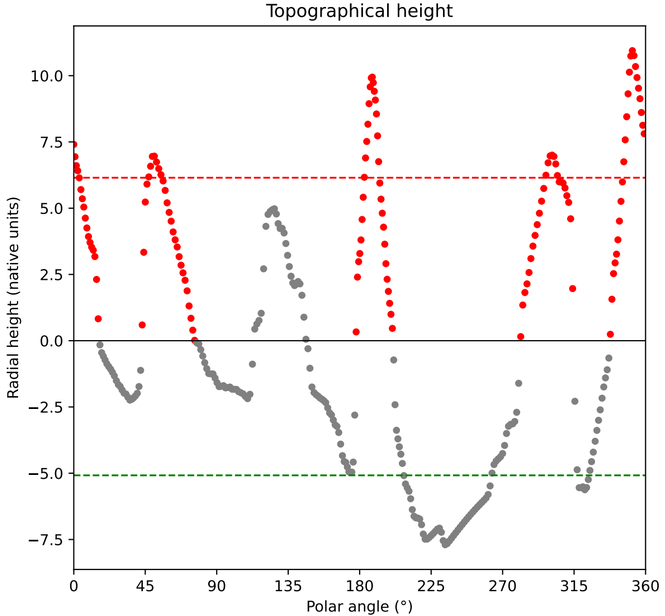

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

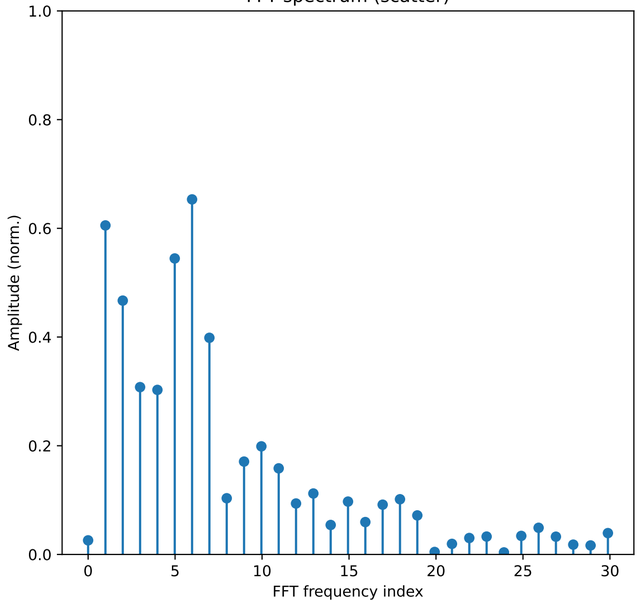

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

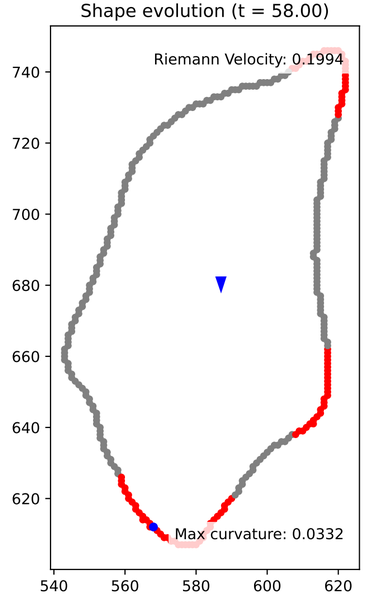

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

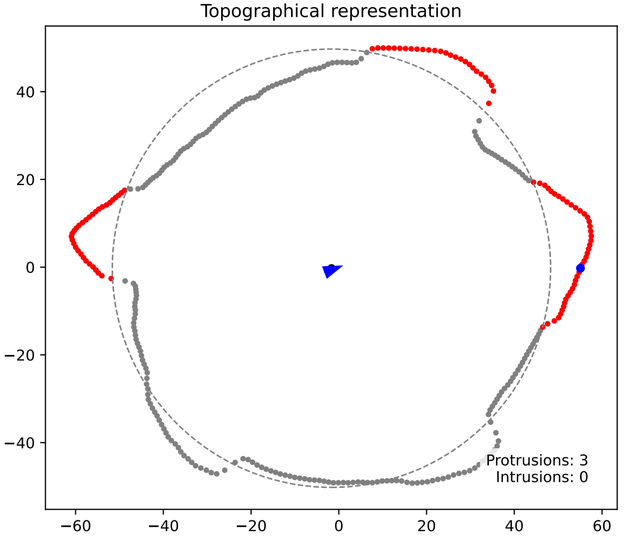

Shape evolution (t = 57.00)
Riemann Velocity: 0.2157
Max curvature: 0.0402
740
720
700
680
660
640
620
600
540
560
580
600
620

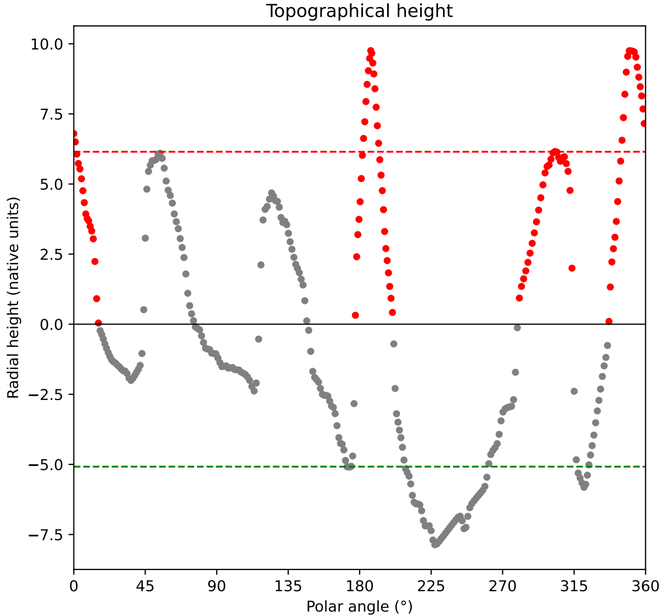

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

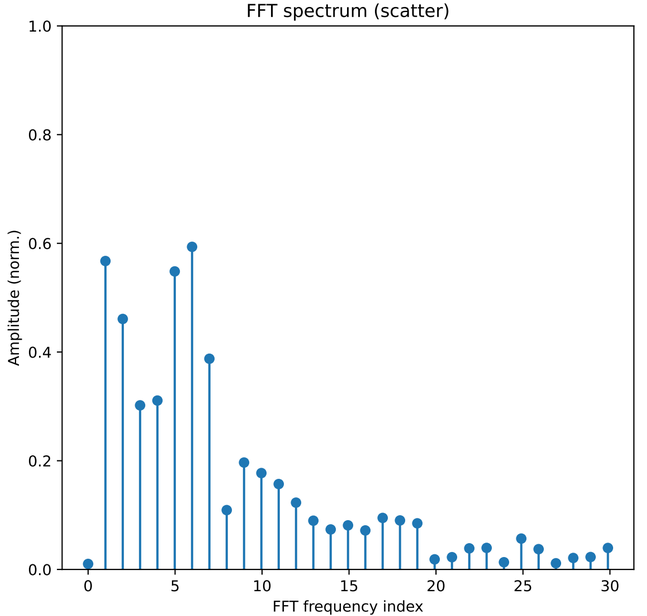

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

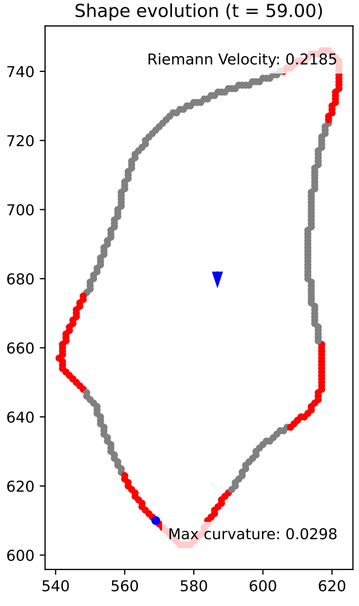

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

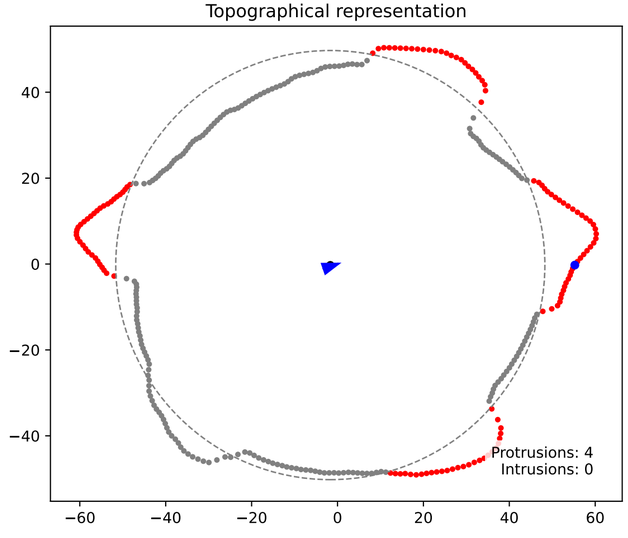

Shape evolution (t = 58.00)
Riemann Velocity: 0.1994
Max curvature: 0.0332
740
720
700
680
660
640
620
540
560
580
600
620

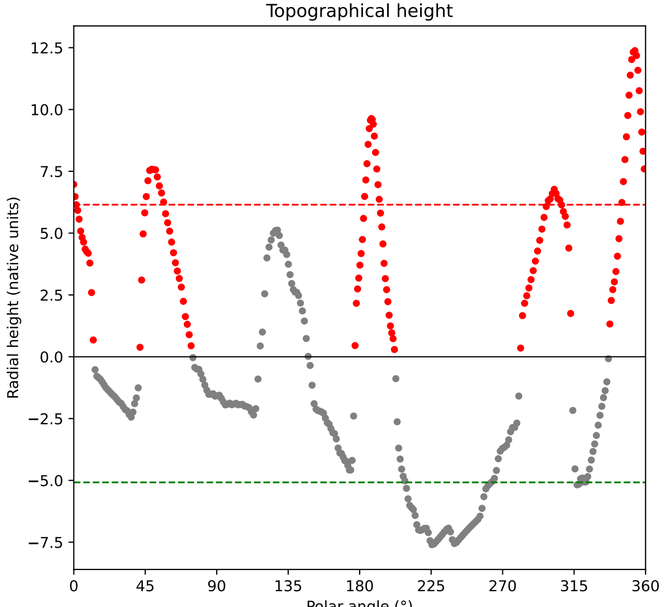

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

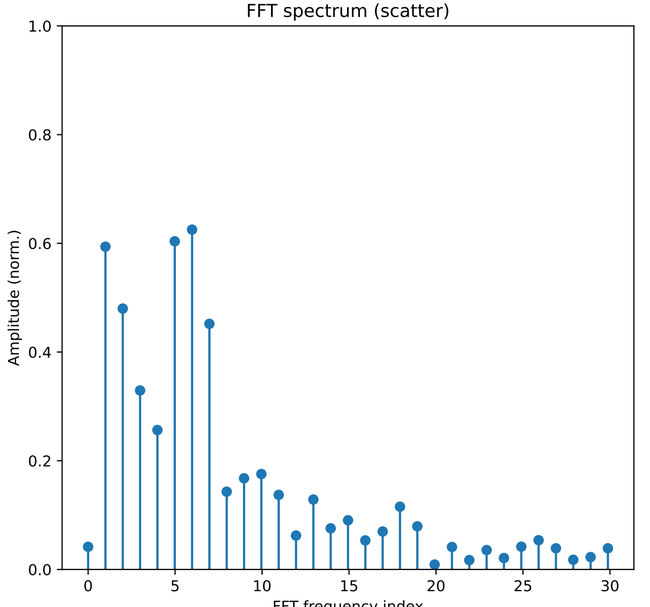

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

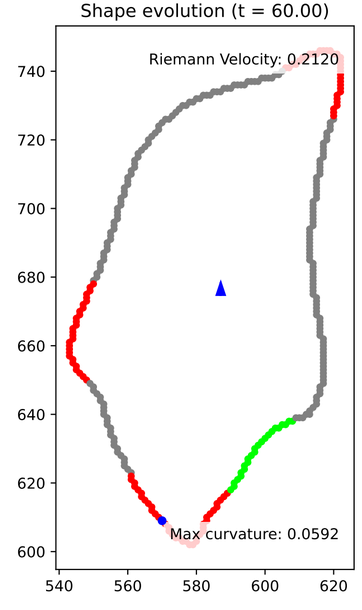

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

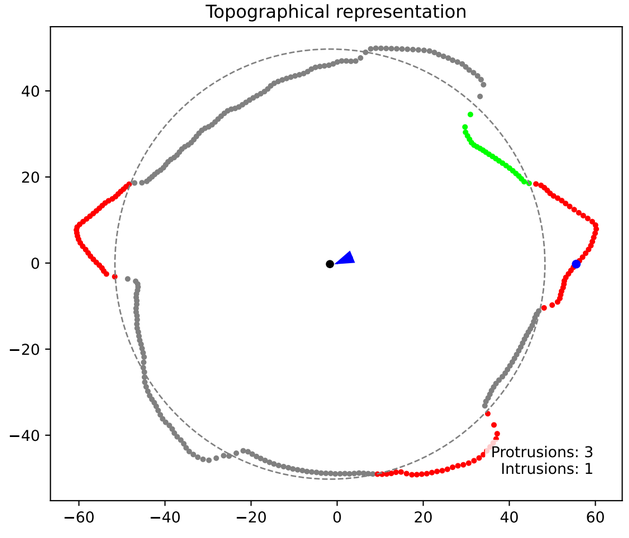

Shape evolution (t = 59.00)
Riemann Velocity: 0.2185
Max curvature: 0.0298
740
720
700
680
660
640
620
600
540
560
580
600
620

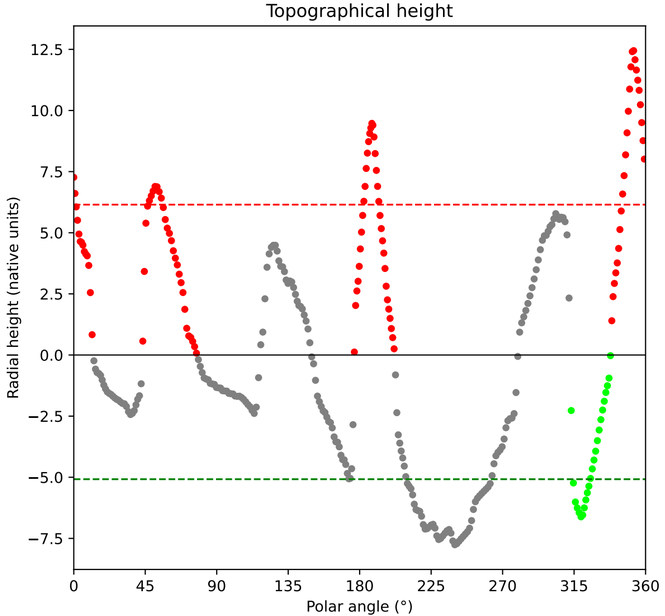

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

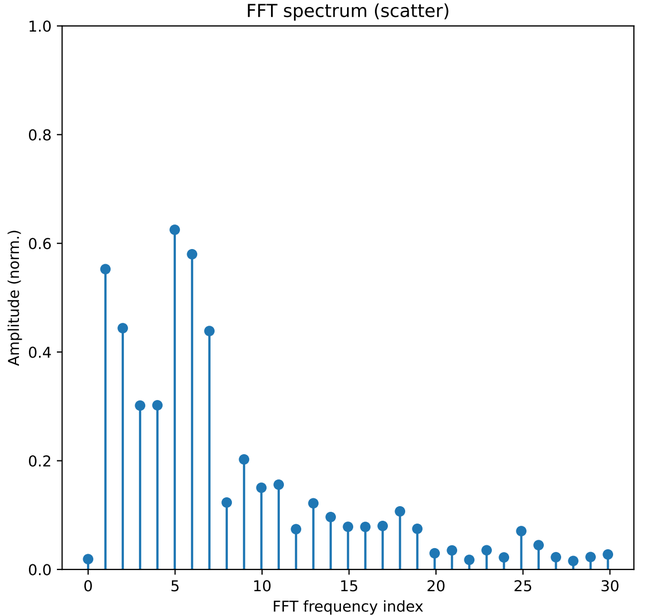

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

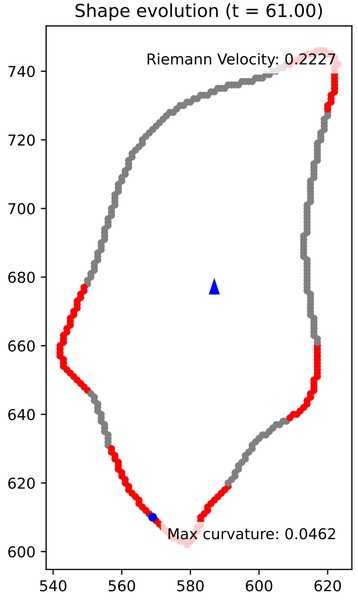

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

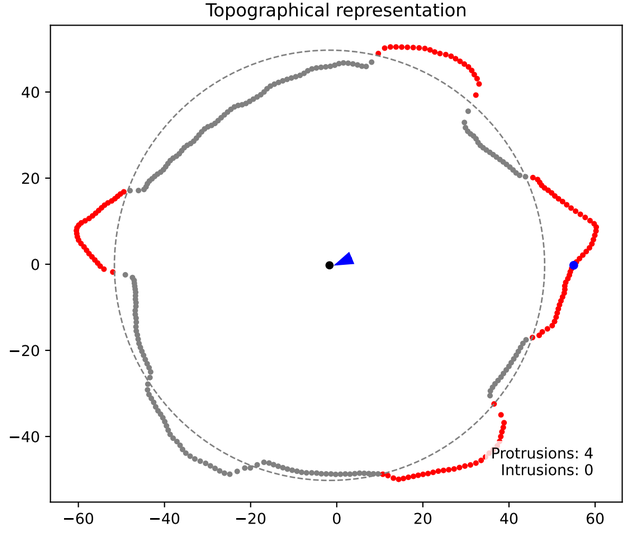

Shape evolution (t = 60.00)
Riemann Velocity: 0.2120
Max curvature: 0.0592
740
720
700
680
660
640
620
600
540
560
580
600
620

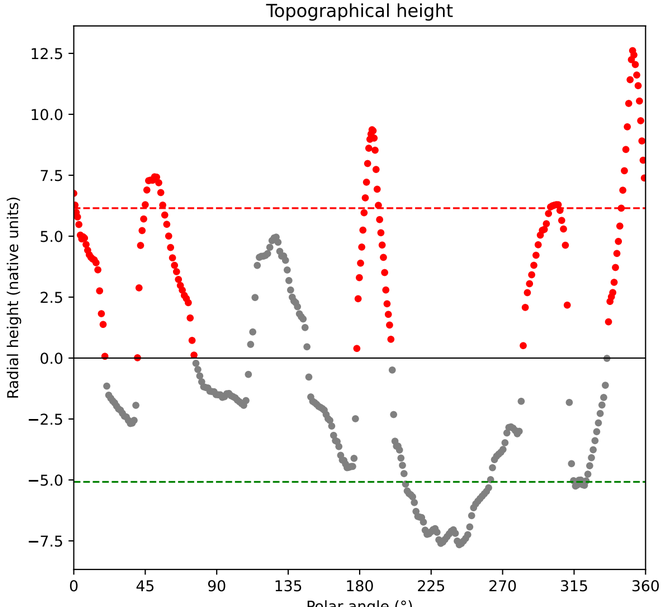

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

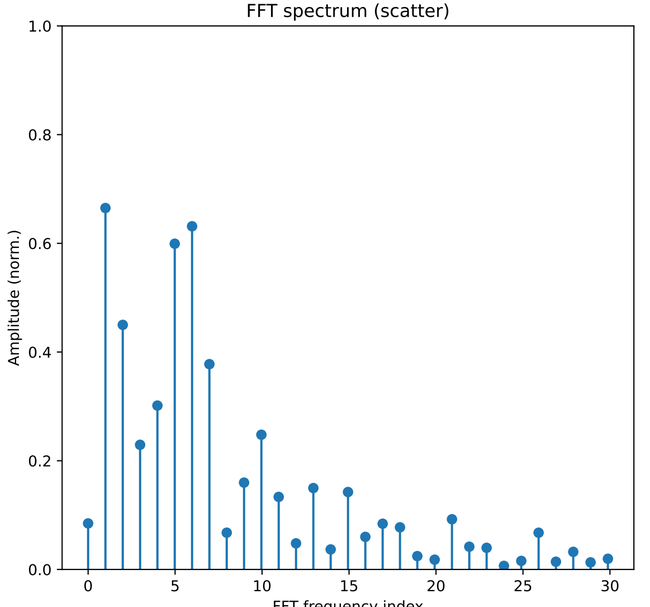

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

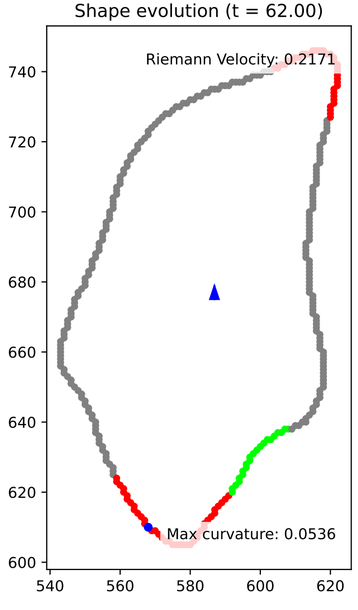

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

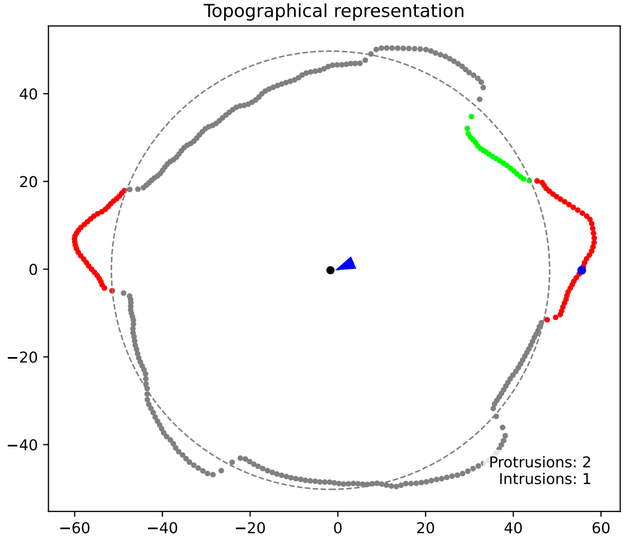

Shape evolution (t = 61.00)
Riemann Velocity: 0.2227
Max curvature: 0.0462
740
720
700
680
660
640
620
600
540
560
580
600
620

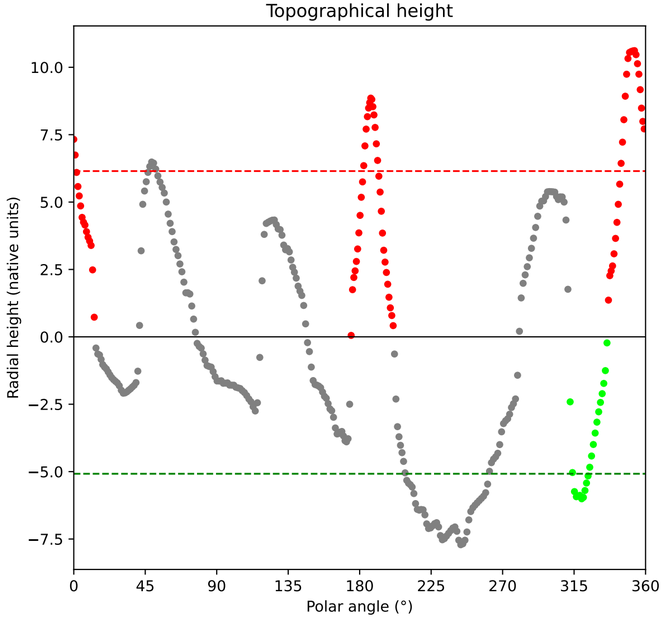

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

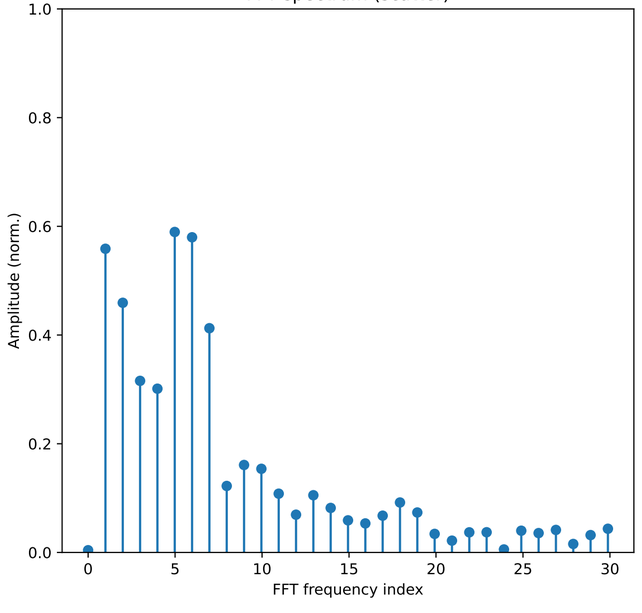

Topographical height
Radial height (native units)
Polar angle (°)
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

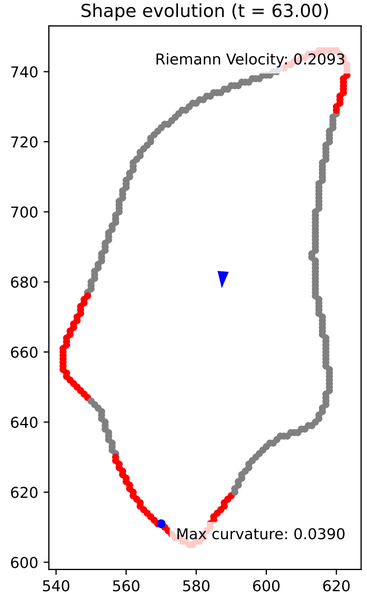

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

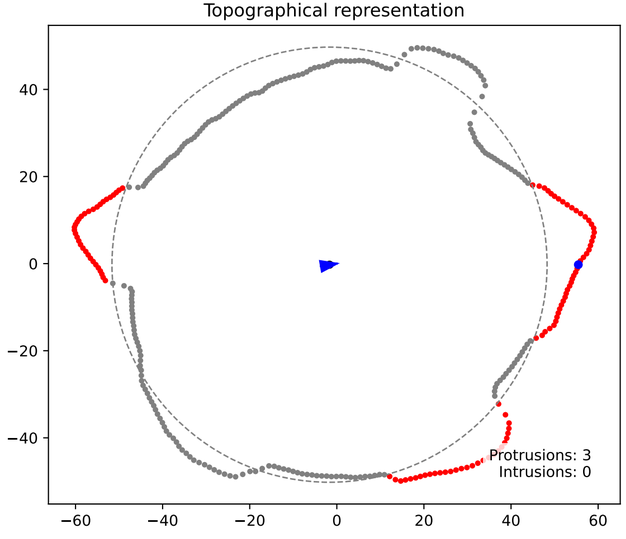

Shape evolution (t = 62.00)
Riemann Velocity: 0.2171
Max curvature: 0.0536
740
720
700
680
660
640
620
600
540
560
580
600
620

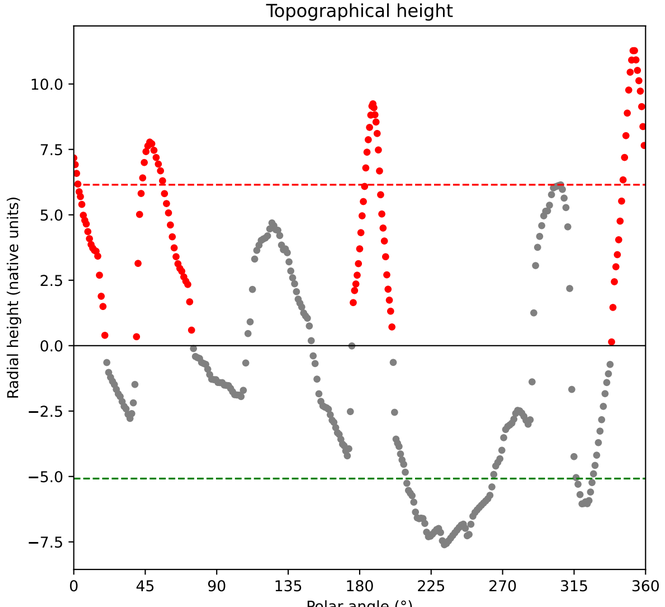

Topographical representation
Protrusions: 2
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

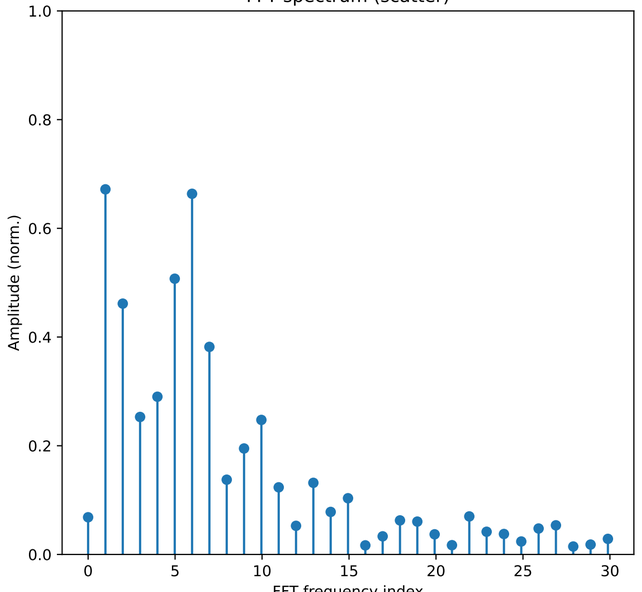

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

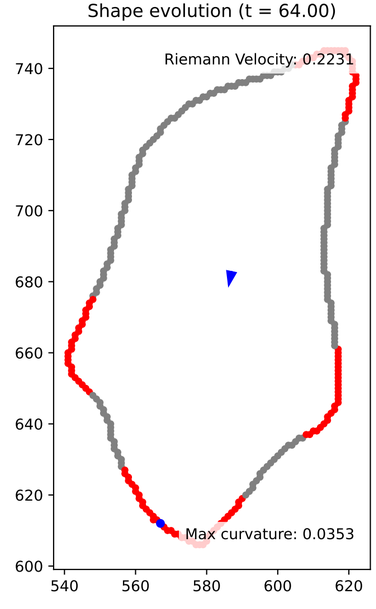

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

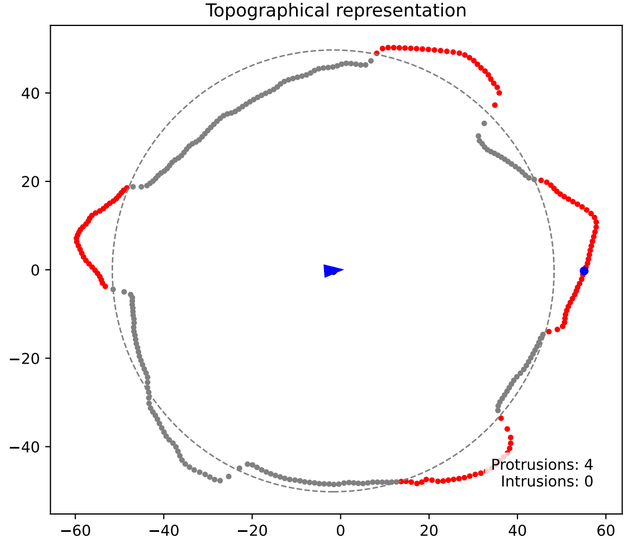

Shape evolution (t = 63.00)
Riemann Velocity: 0.2093
Max curvature: 0.0390
740
720
700
680
660
640
620
600
540
560
580
600
620

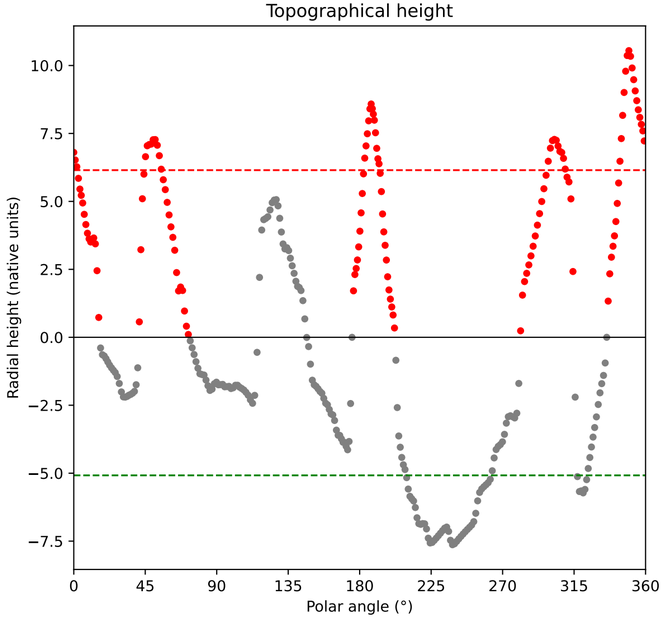

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

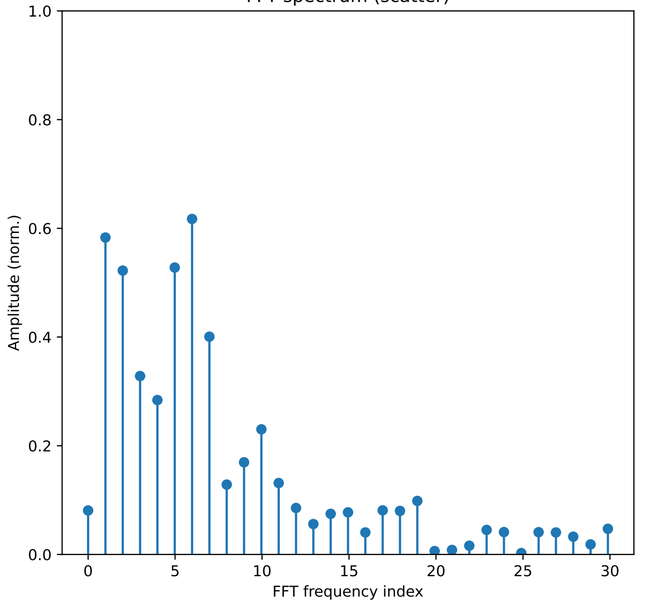

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

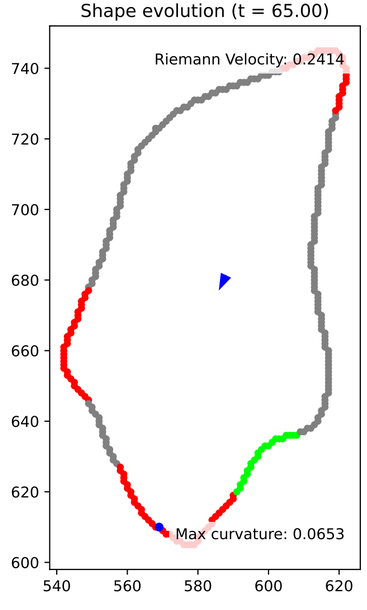

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

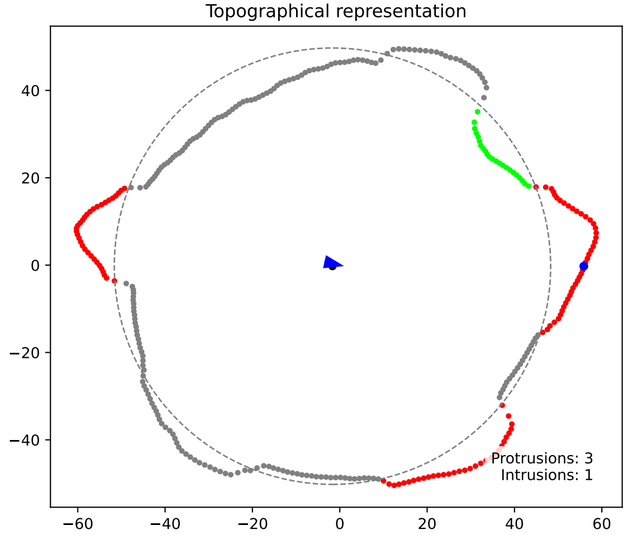

Shape evolution (t = 64.00)
Riemann Velocity: 0.2231
Max curvature: 0.0353
740
720
700
680
660
640
620
600
540
560
580
600
620

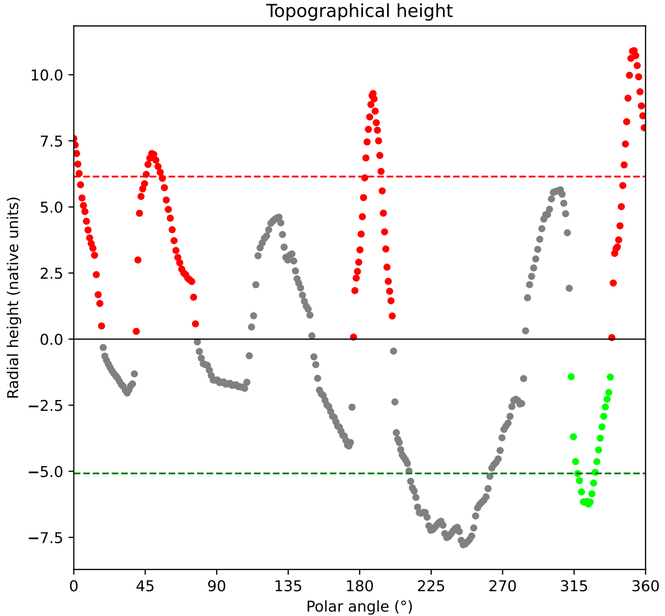

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

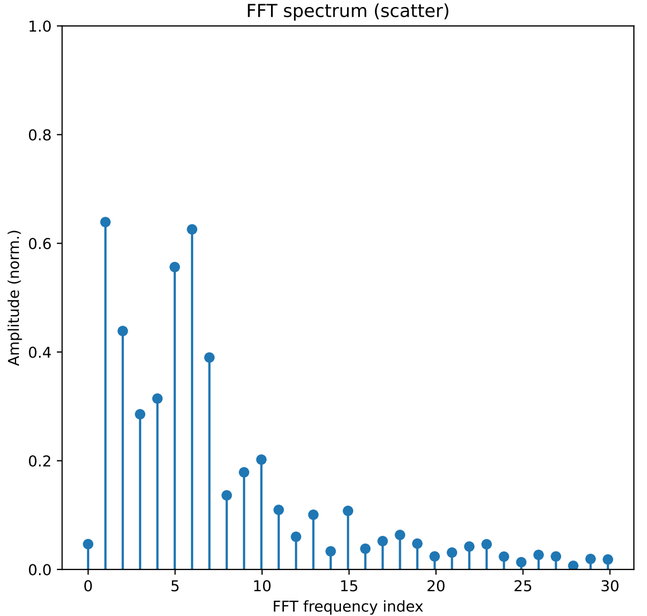

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

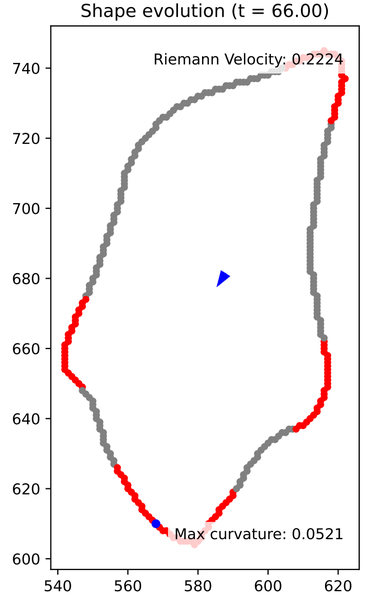

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

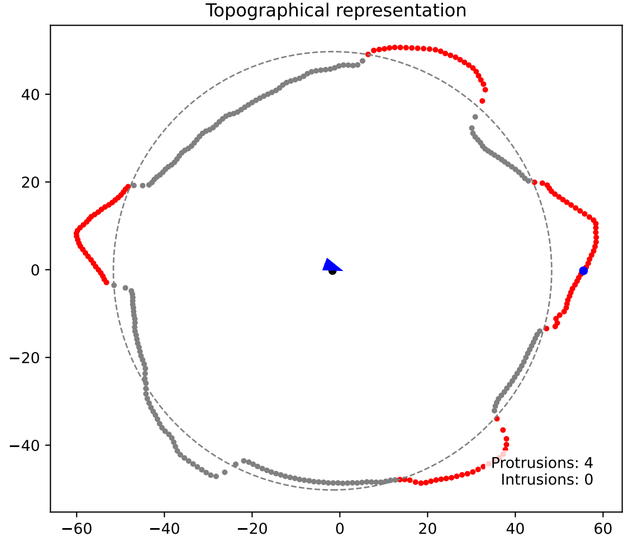

Shape evolution (t = 65.00)
Riemann Velocity: 0.2414
Max curvature: 0.0653
740
720
700
680
660
640
620
600
540
560
580
600
620

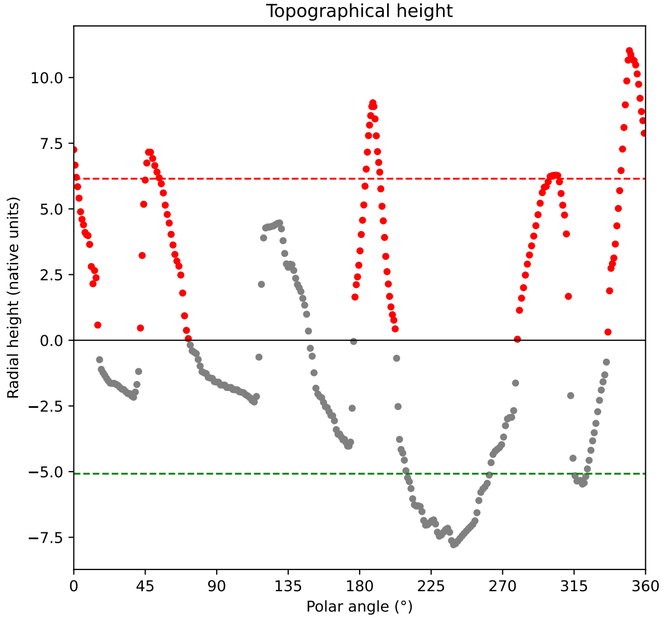

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

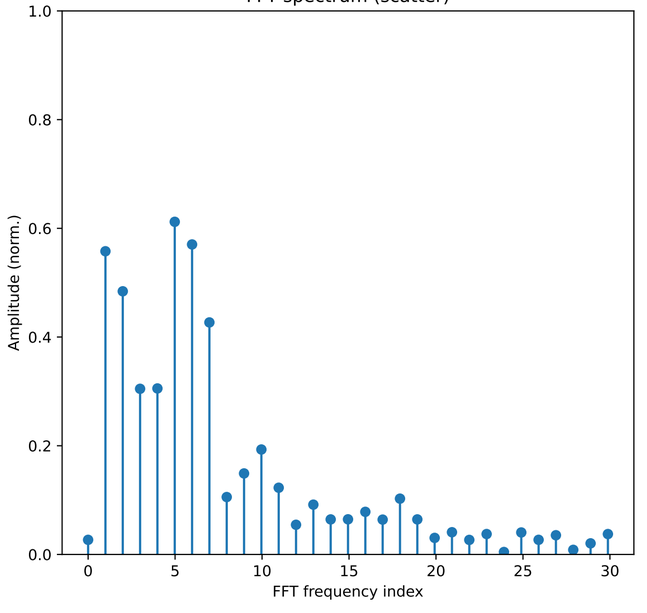

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

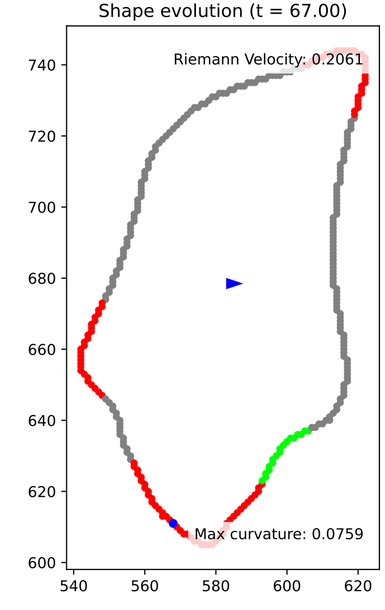

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

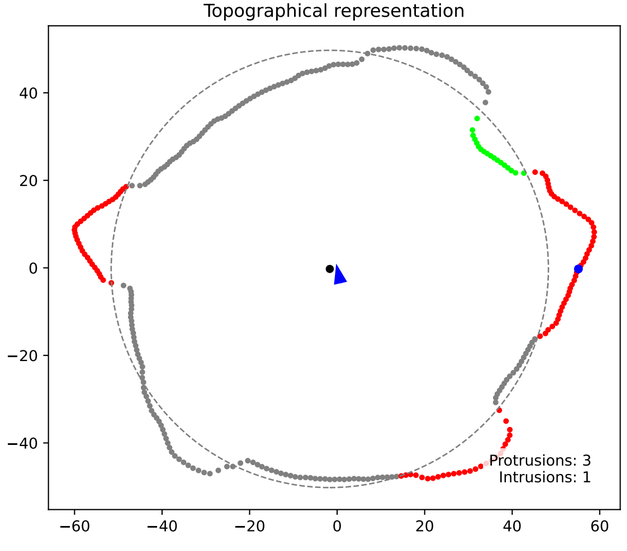

Shape evolution (t = 66.00)
Riemann Velocity: 0.2224
Max curvature: 0.0521
740
720
700
680
660
640
620
600
540
560
580
600
620

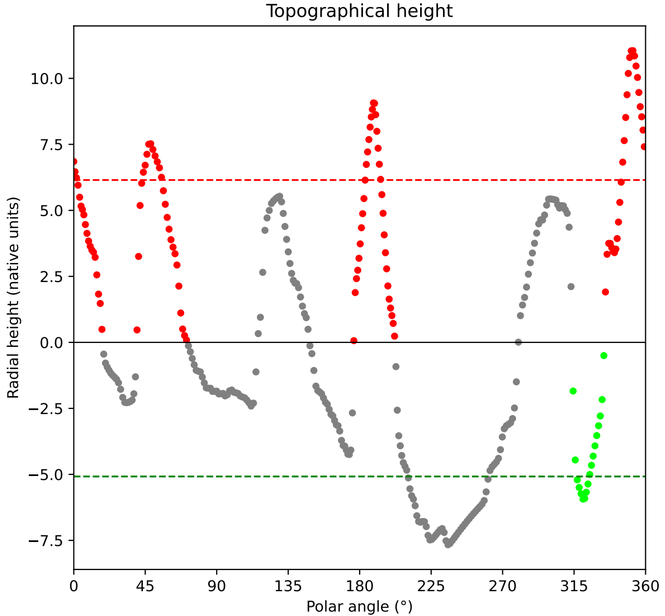

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

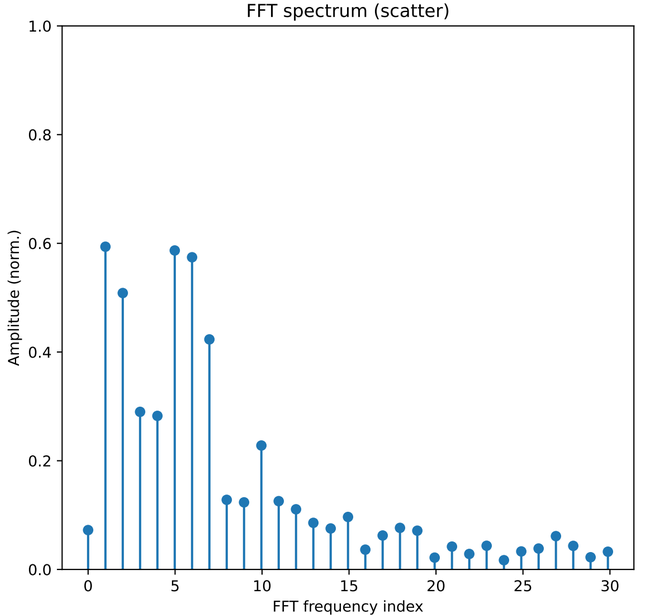

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

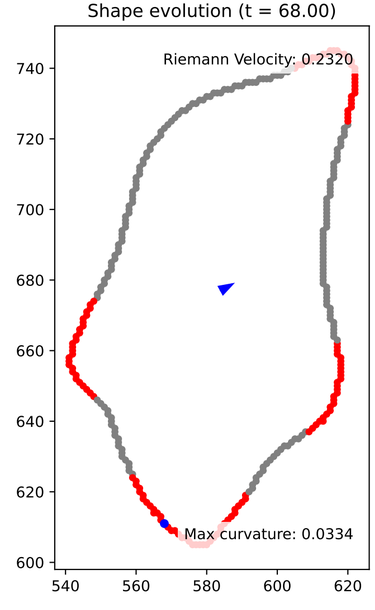

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

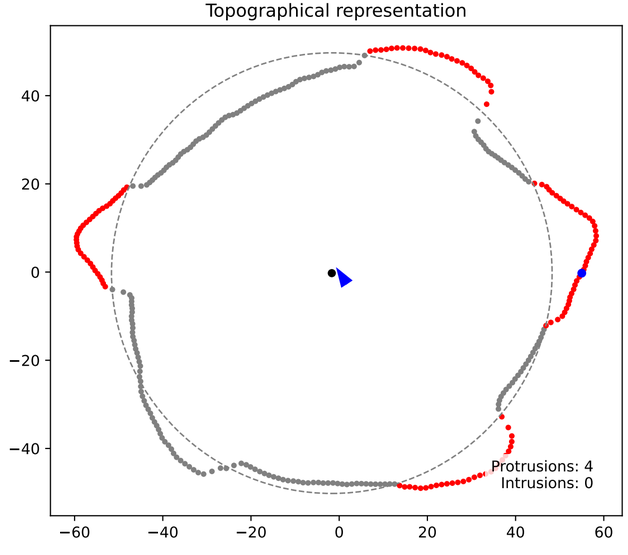

Shape evolution (t = 67.00)
Riemann Velocity: 0.2061
Max curvature: 0.0759
740
720
700
680
660
640
620
600
540
560
580
600
620

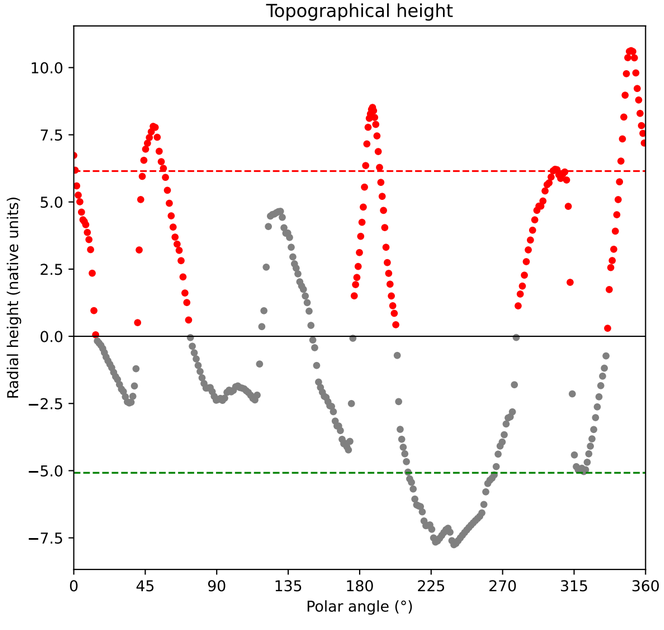

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

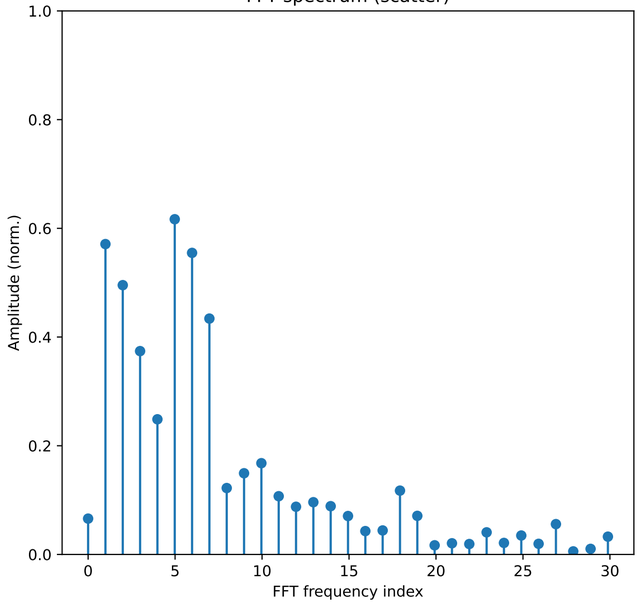

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

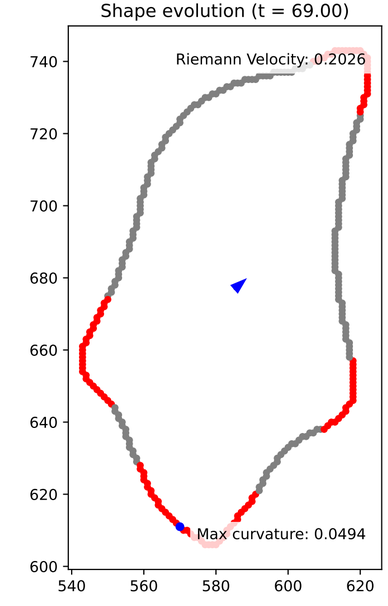

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

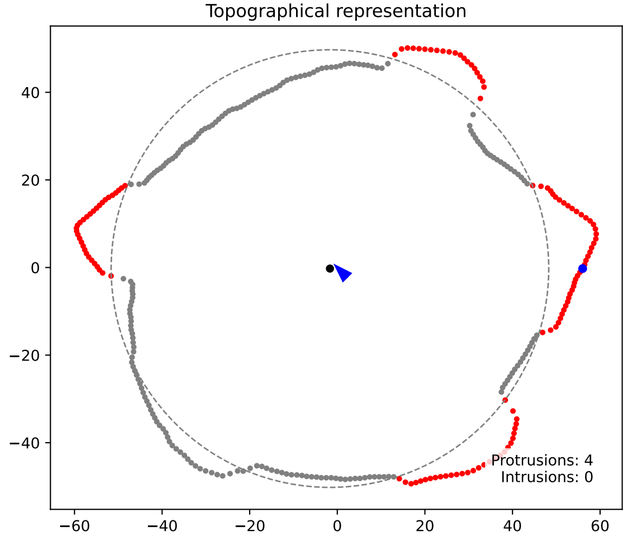

Shape evolution (t = 68.00)
Riemann Velocity: 0.2320
Max curvature: 0.0334
740
720
700
680
660
640
620
600
540
560
580
600
620

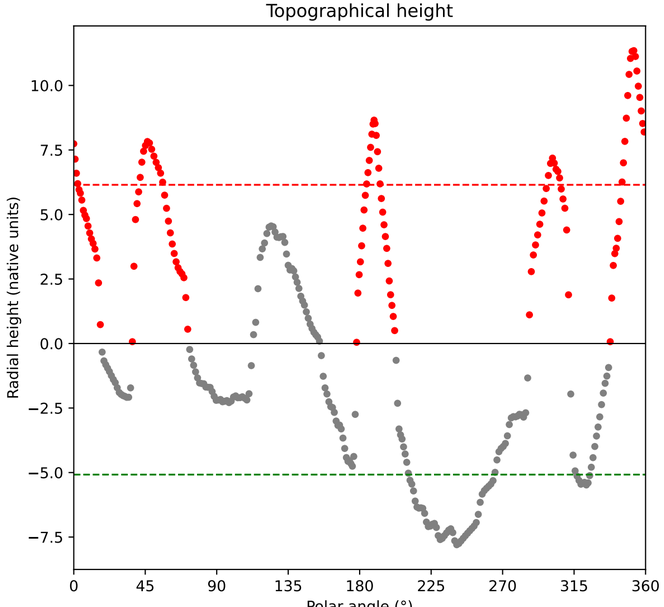

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

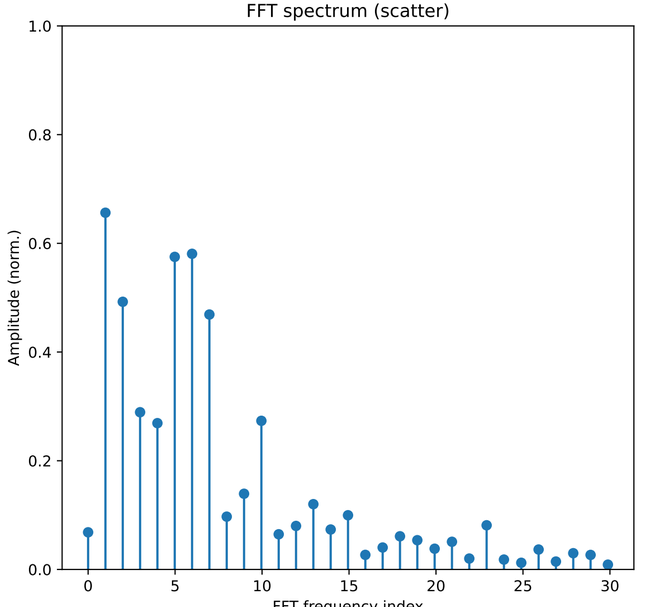

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

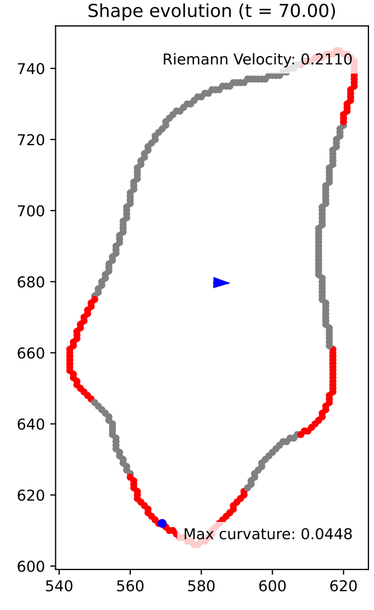

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

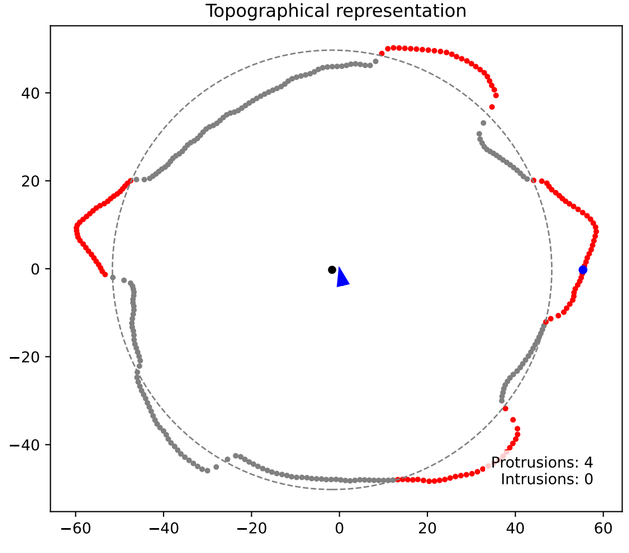

Shape evolution (t = 69.00)
Riemann Velocity: 0.2026
Max curvature: 0.0494
740
720
700
680
660
640
620
600
540
560
580
600
620

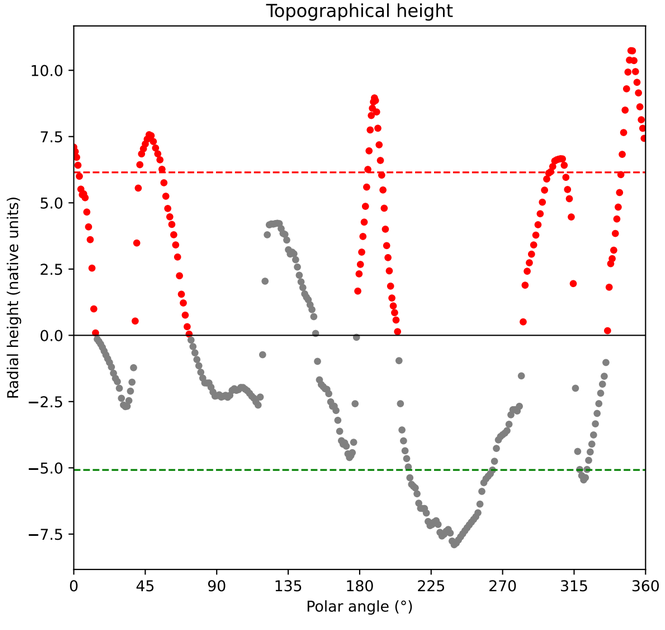

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

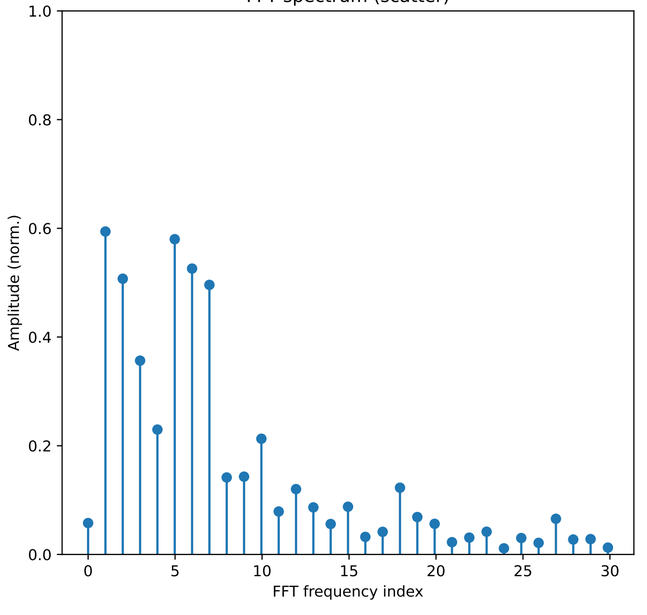

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

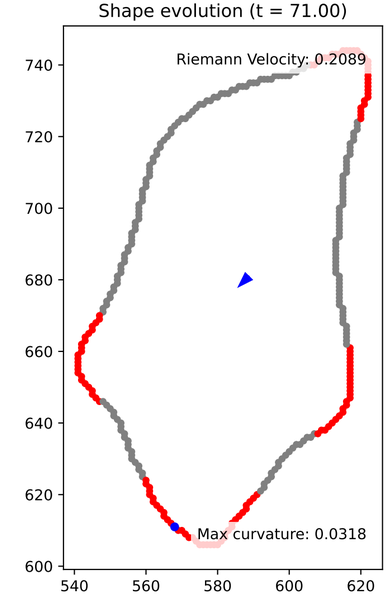

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

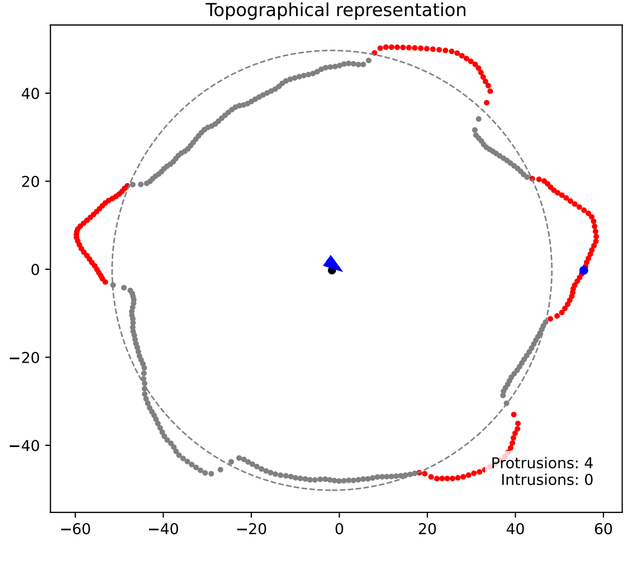

Shape evolution (t = 70.00)
Riemann Velocity: 0.2110
Max curvature: 0.0448
740
720
700
680
660
640
620
600
540
560
580
600
620

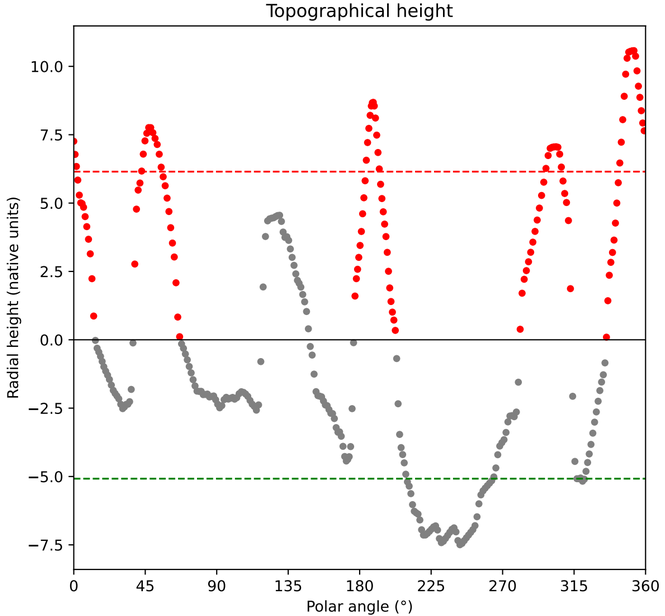

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

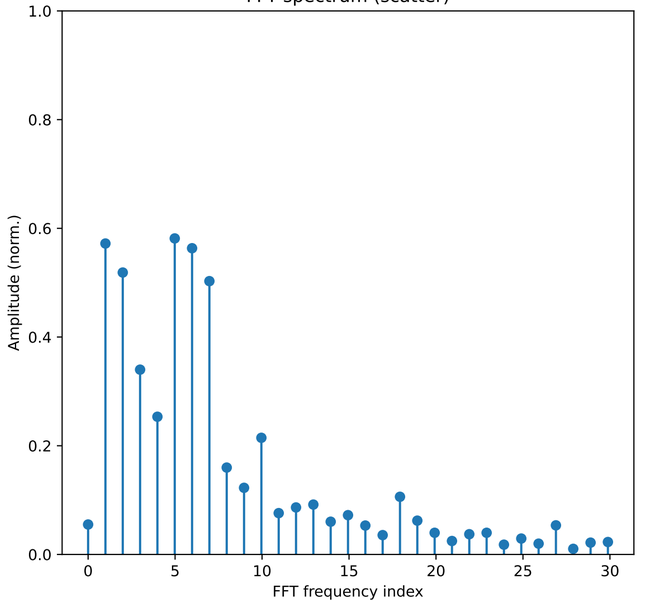

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

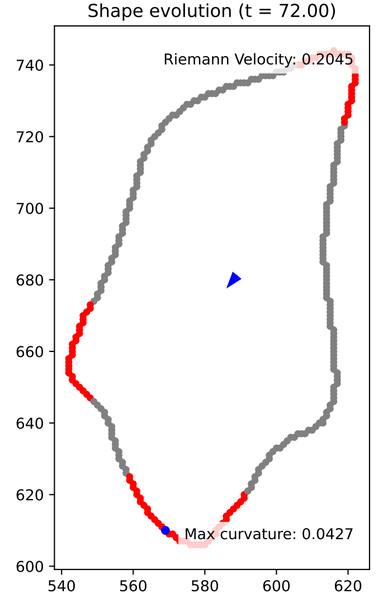

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

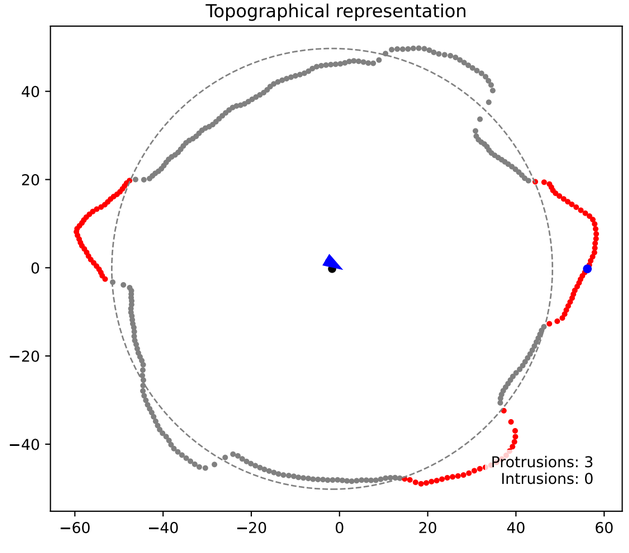

Shape evolution (t = 71.00)
Riemann Velocity: 0.2089
Max curvature: 0.0318
740
720
700
680
660
640
620
600
540
560
580
600
620

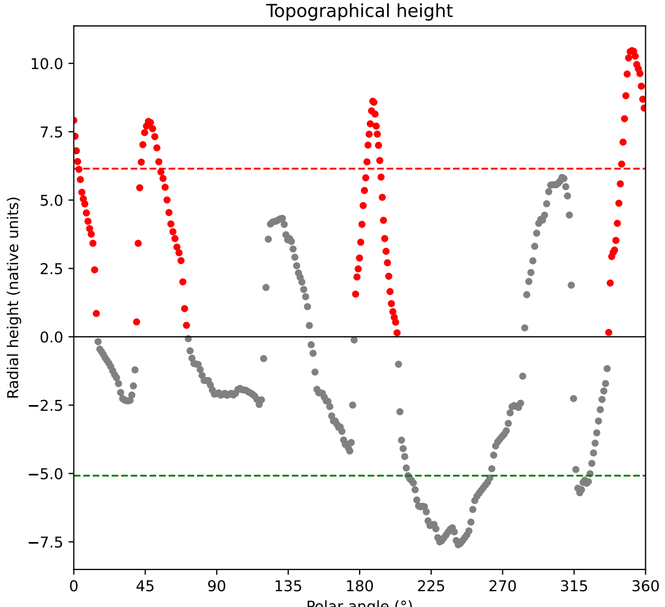

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

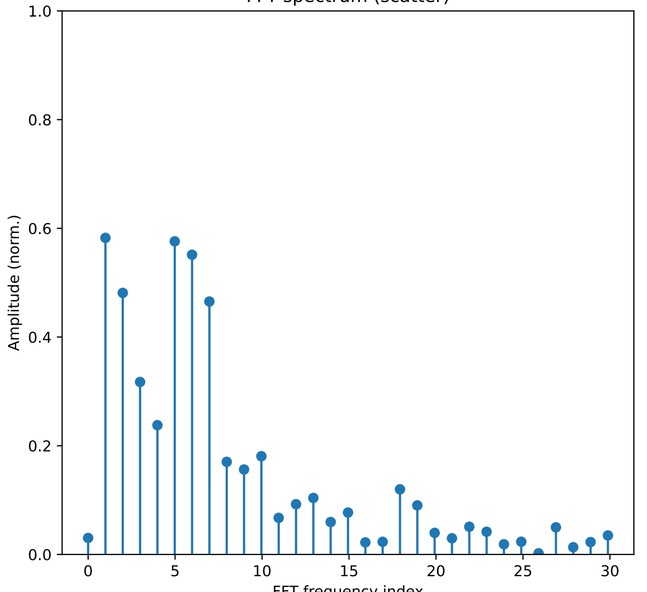

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

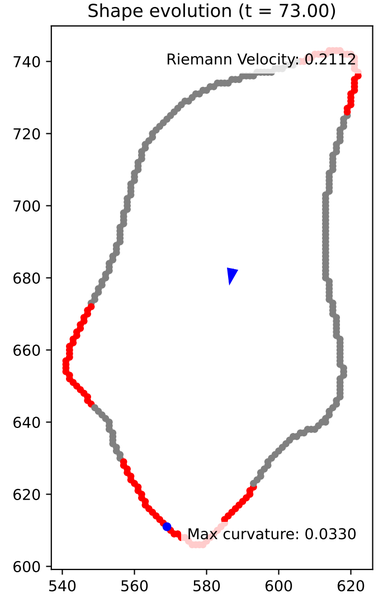

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

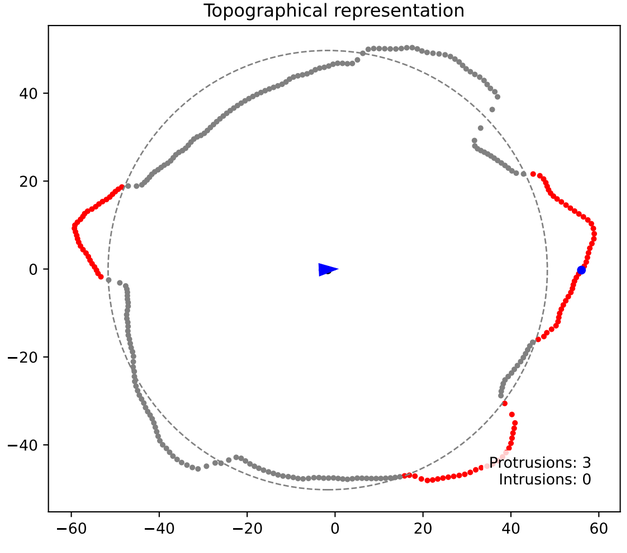

Shape evolution (t = 72.00)
Riemann Velocity: 0.2045
Max curvature: 0.0427
740
720
700
680
660
640
620
600
540
560
580
600
620

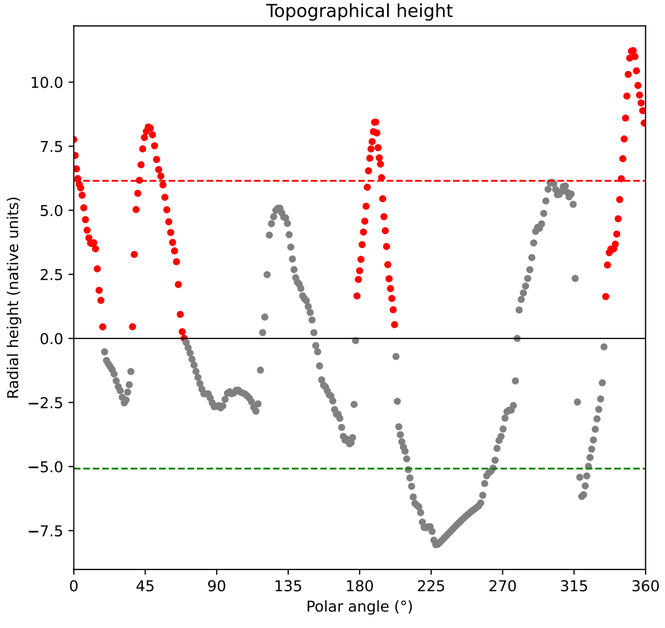

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

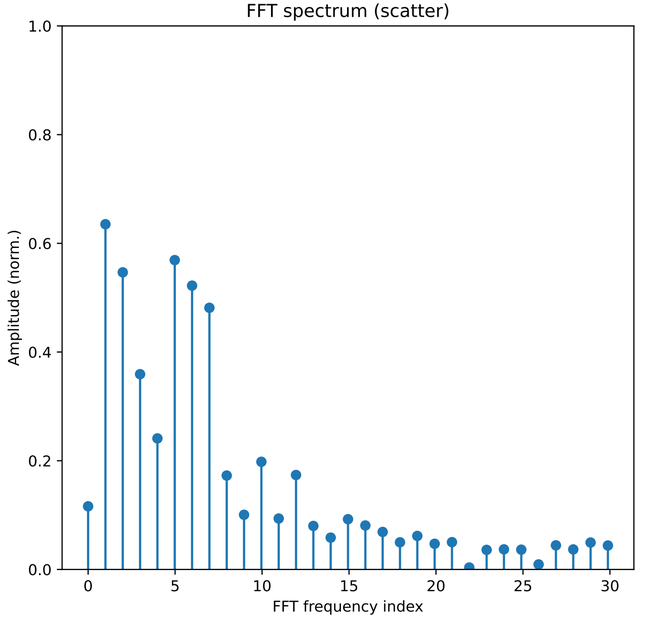

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

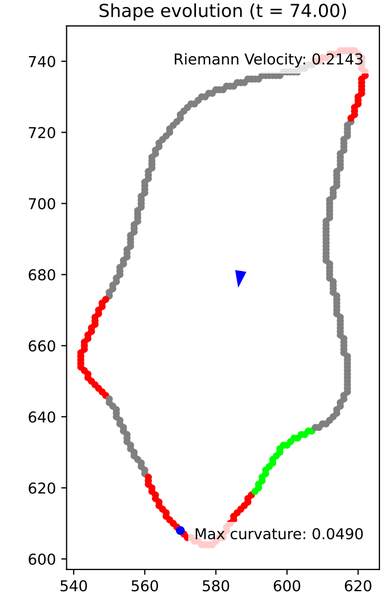

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

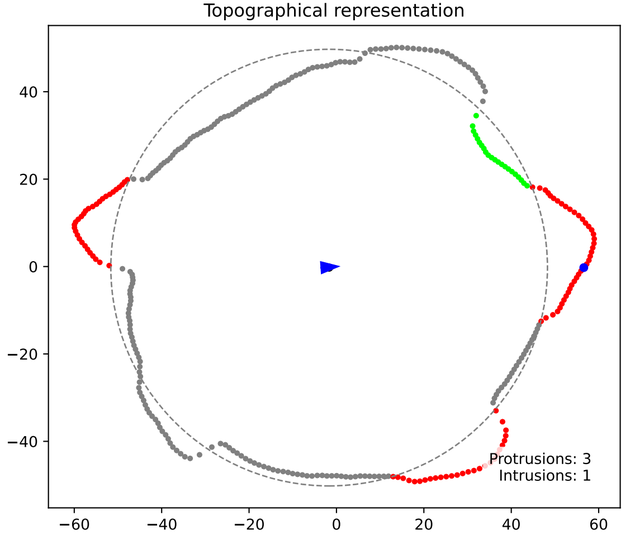

Shape evolution (t = 73.00)
Riemann Velocity: 0.2112
Max curvature: 0.0330
740
720
700
680
660
640
620
600
540
560
580
600
620

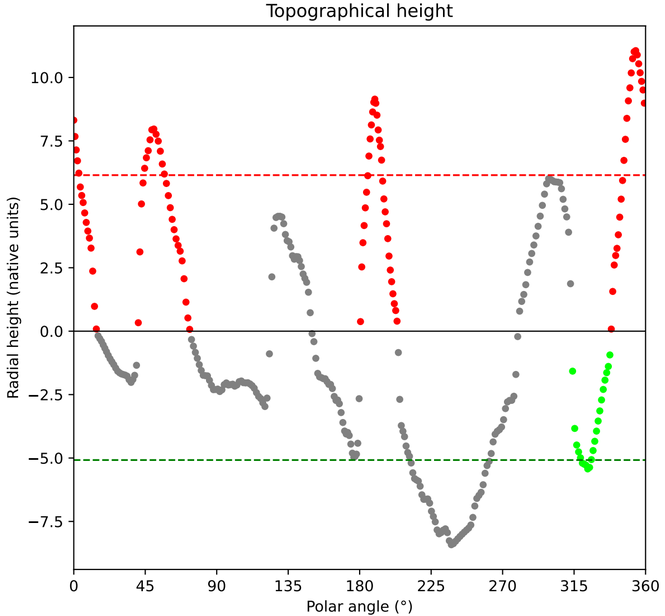

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

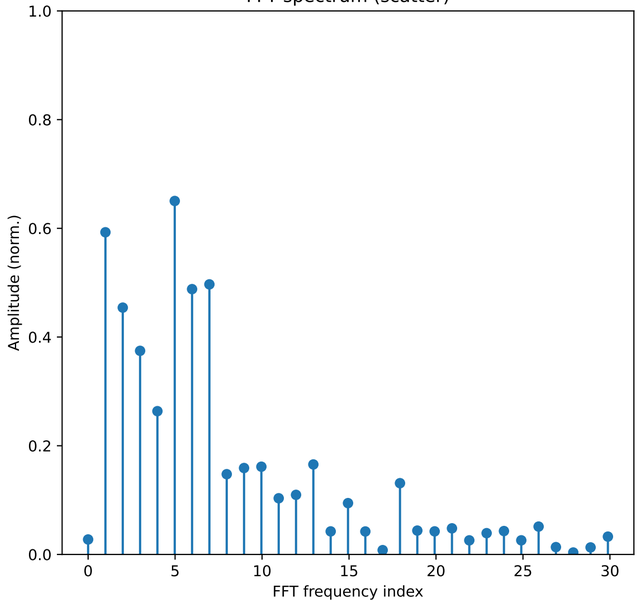

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

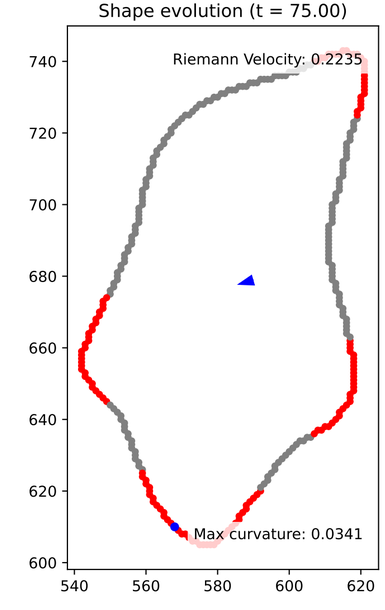

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

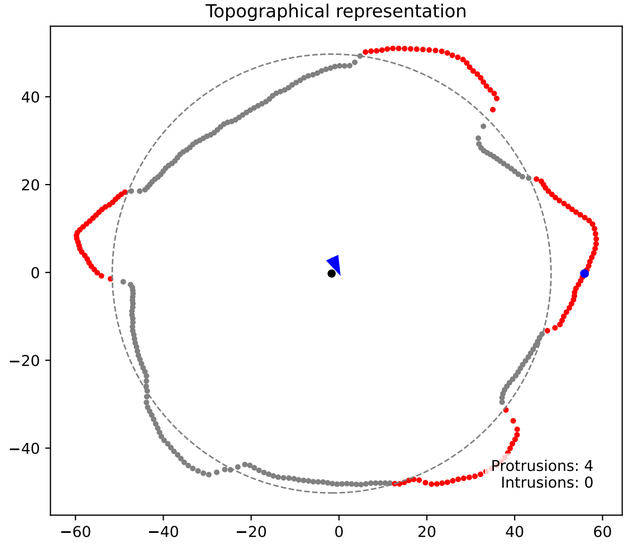

Shape evolution (t = 74.00)
Riemann Velocity: 0.2143
Max curvature: 0.0490
740
720
700
680
660
640
620
600
540
560
580
600
620

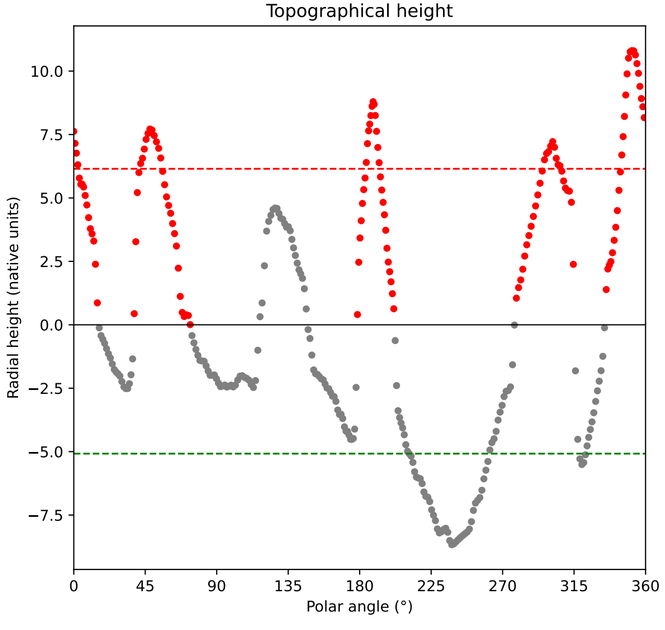

Topographical representation
Protrusions: 3
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

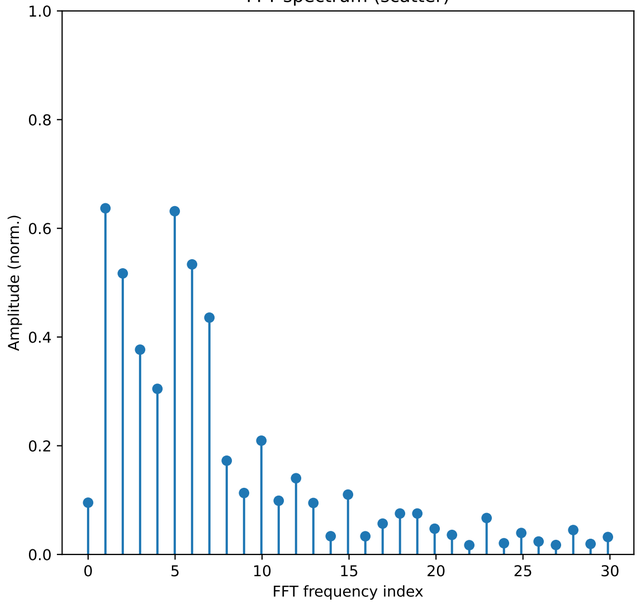

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

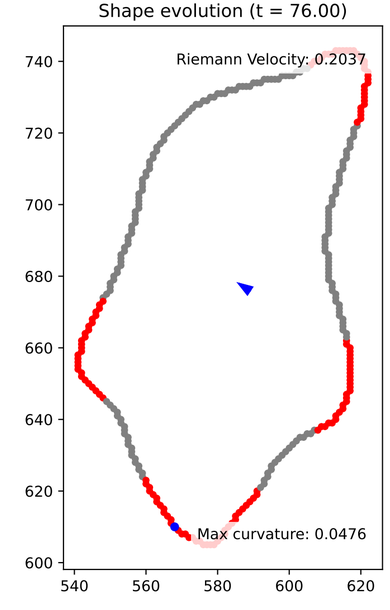

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

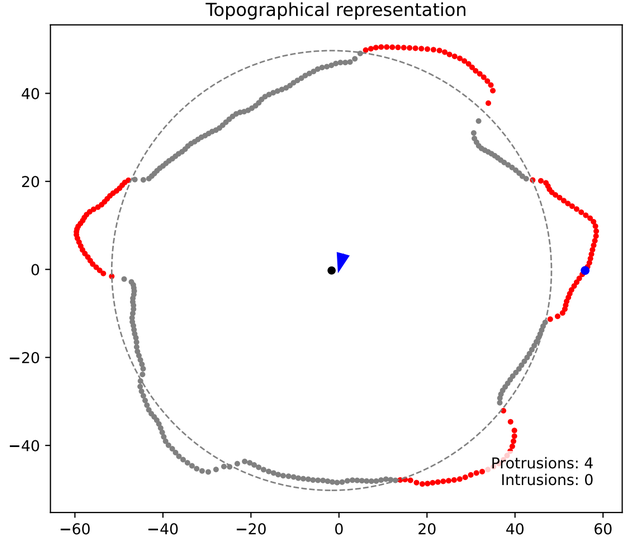

Shape evolution (t = 75.00)
Riemann Velocity: 0.2235
Max curvature: 0.0341
740
720
700
680
660
640
620
600
540
560
580
600
620

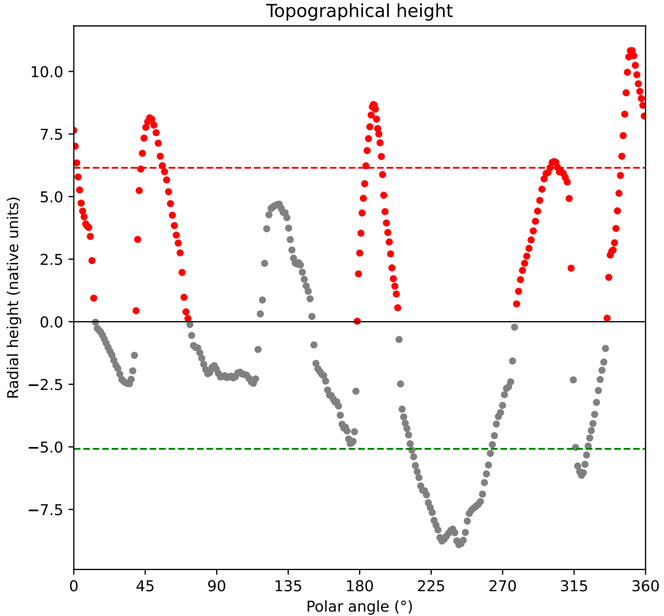

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

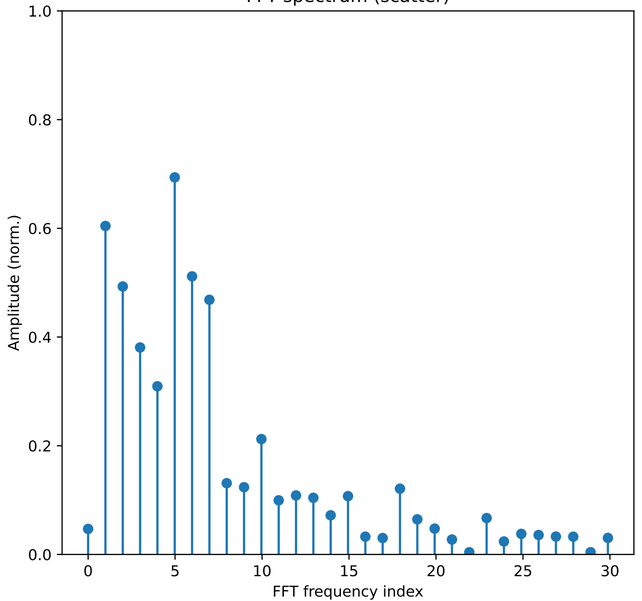

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

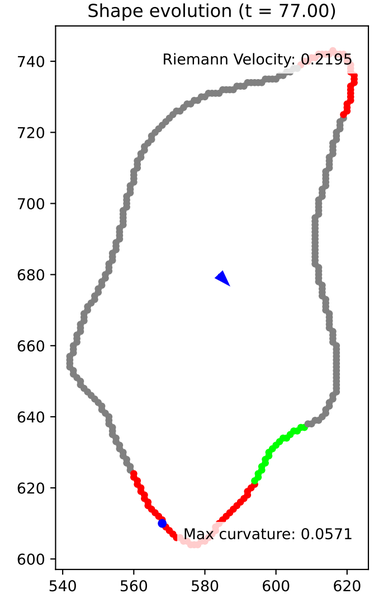

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

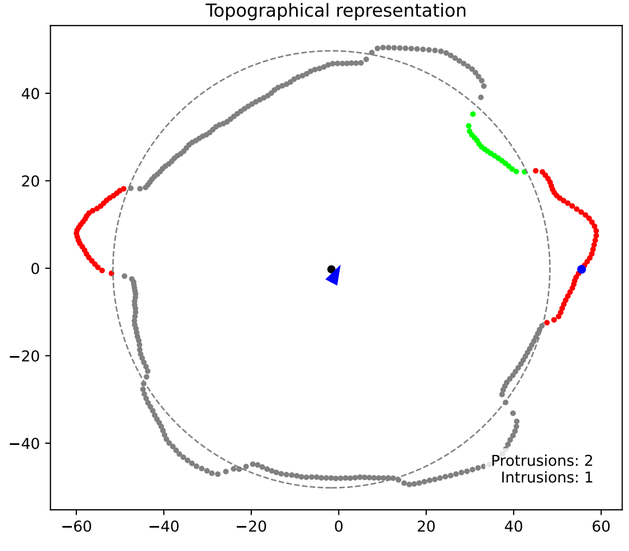

Shape evolution (t = 76.00)
Riemann Velocity: 0.2037
Max curvature: 0.0476
740
720
700
680
660
640
620
600
540
560
580
600
620

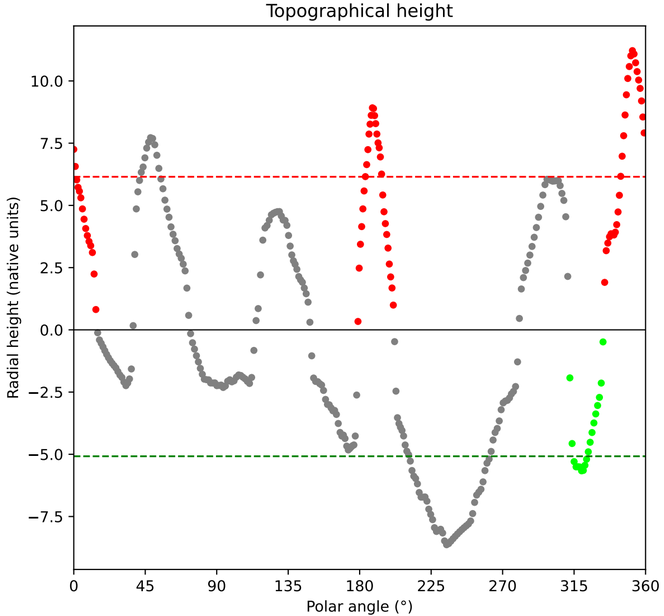

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

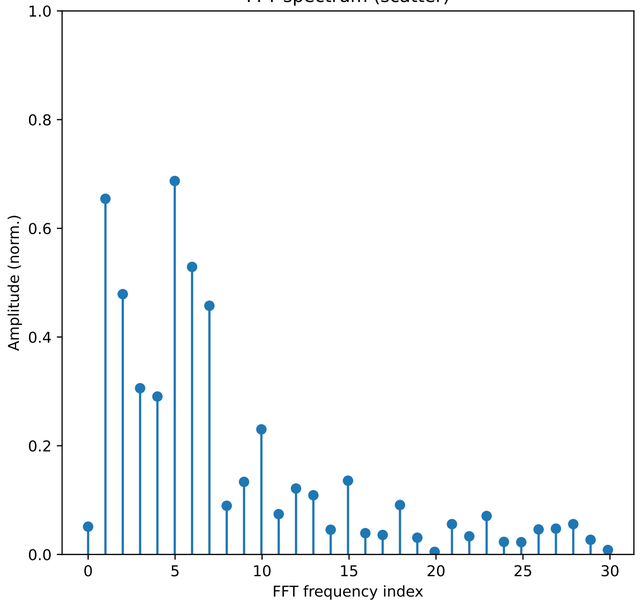

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

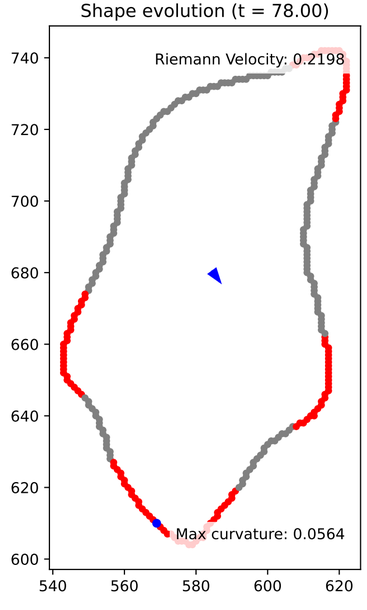

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

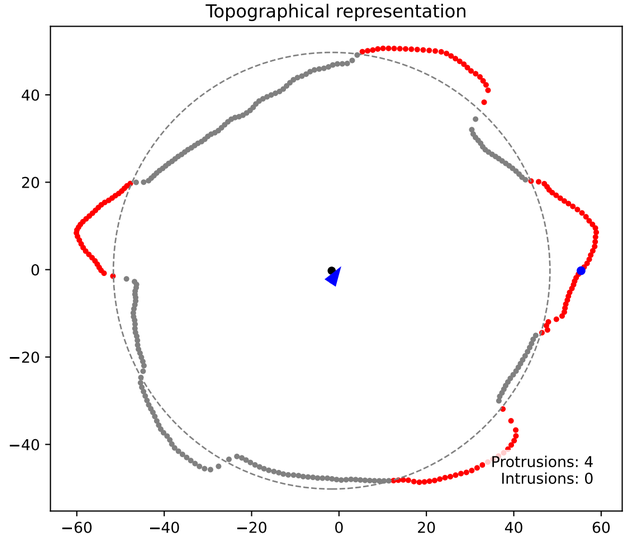

Shape evolution (t = 77.00)
Riemann Velocity: 0.2195
Max curvature: 0.0571
740
720
700
680
660
640
620
600
540
560
580
600
620

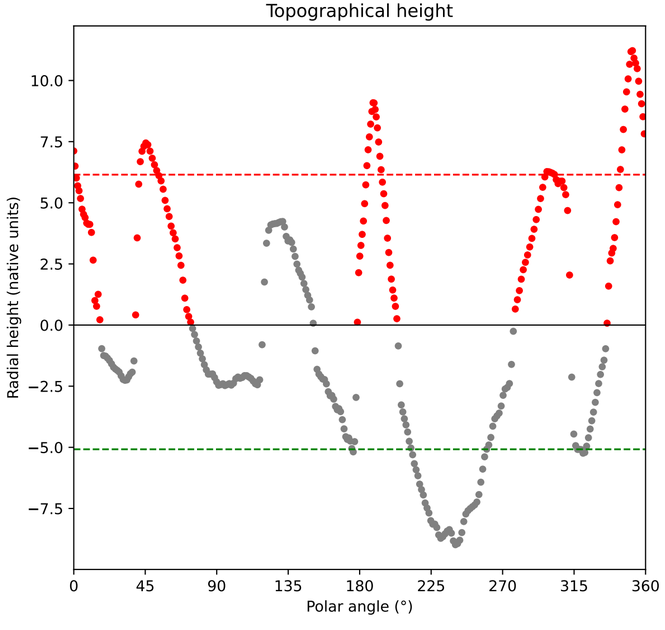

Topographical representation
Protrusions: 2
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

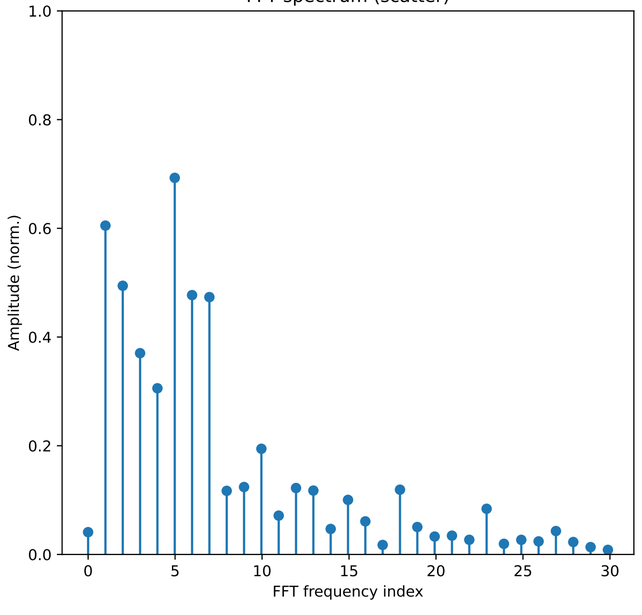

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

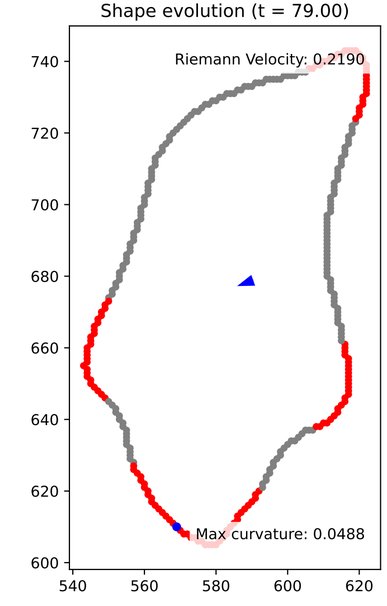

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

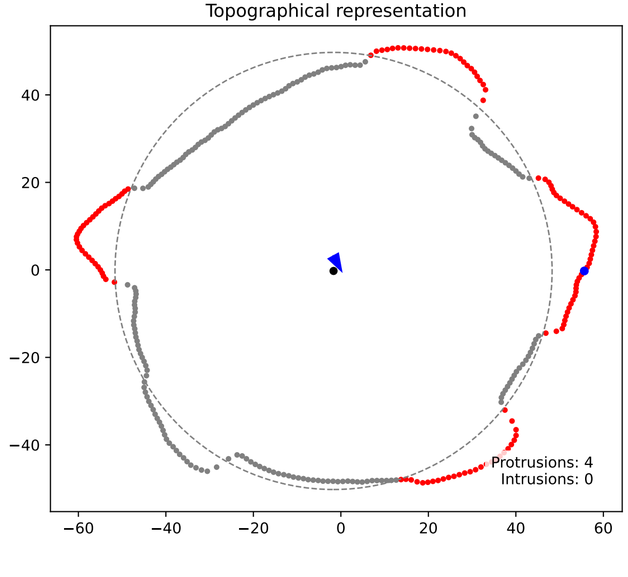

Shape evolution (t = 78.00)
Riemann Velocity: 0.2198
Max curvature: 0.0564
740
720
700
680
660
640
620
600
540
560
580
600
620

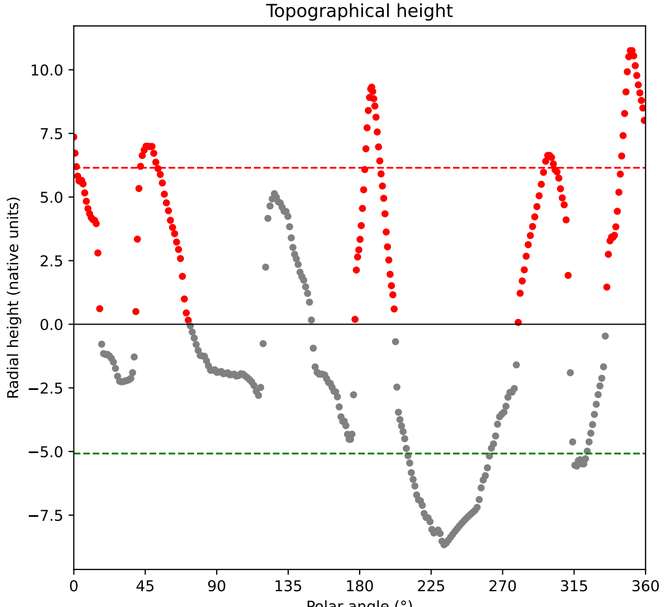

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

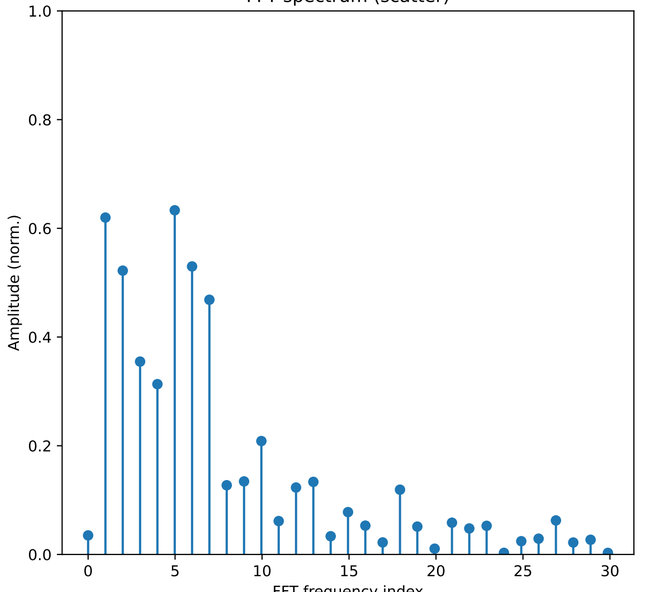

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

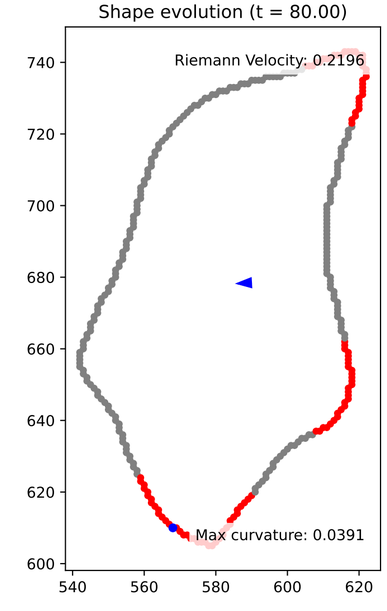

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

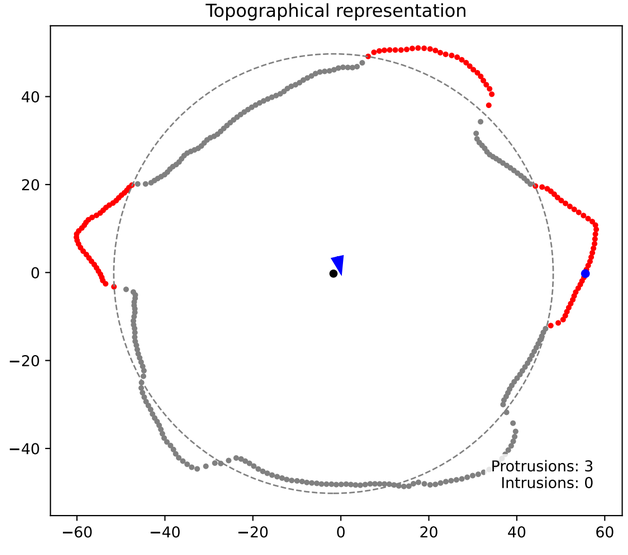

Shape evolution (t = 79.00)
Riemann Velocity: 0.2190
Max curvature: 0.0488
740
720
700
680
660
640
620
600
540
560
580
600
620

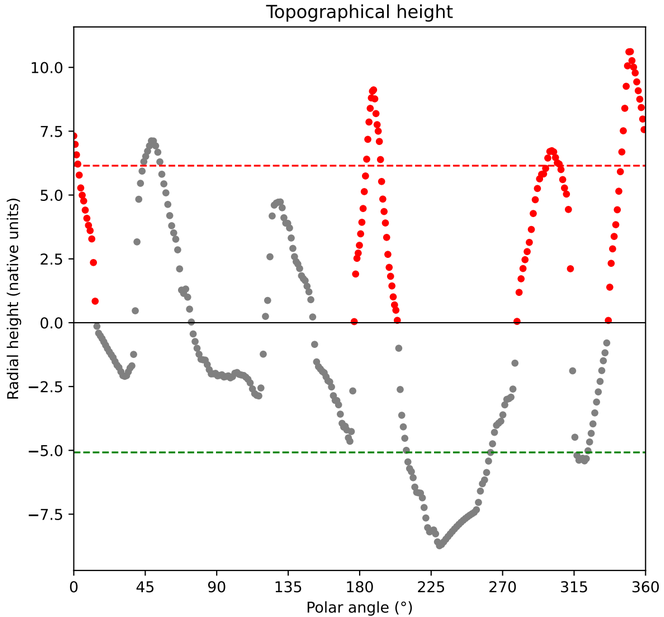

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

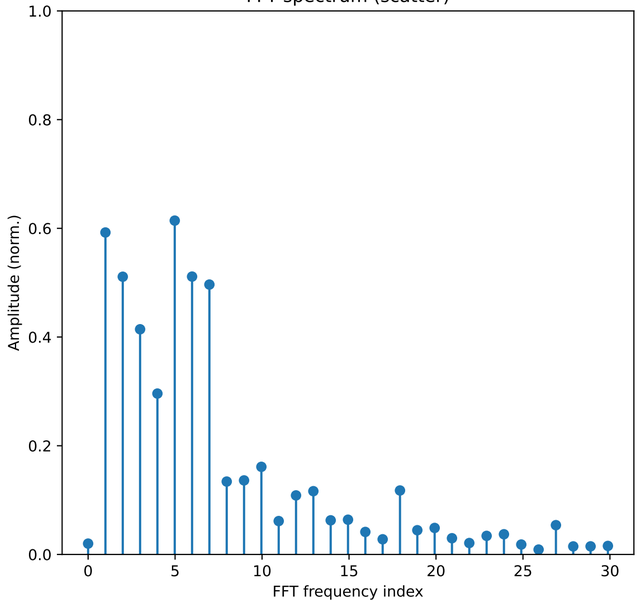

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

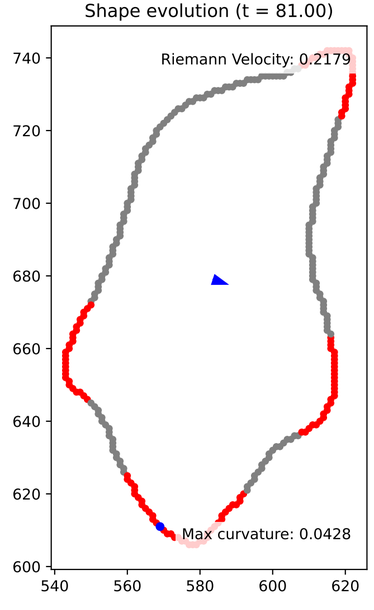

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

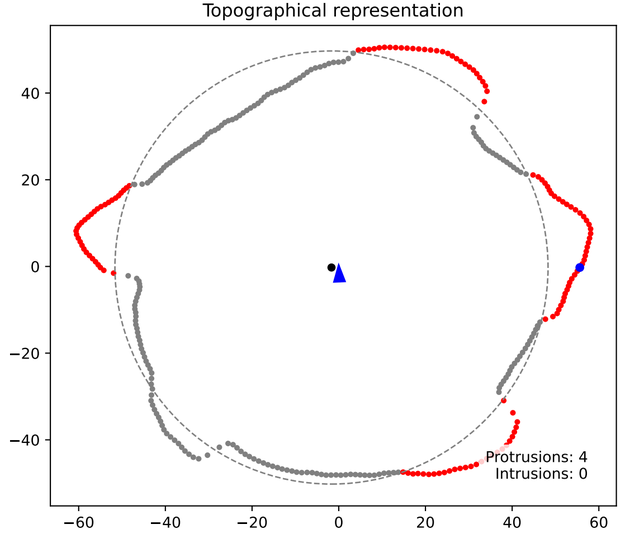

Shape evolution (t = 80.00)
Riemann Velocity: 0.2196
Max curvature: 0.0391
740
720
700
680
660
640
620
600
540
560
580
600
620

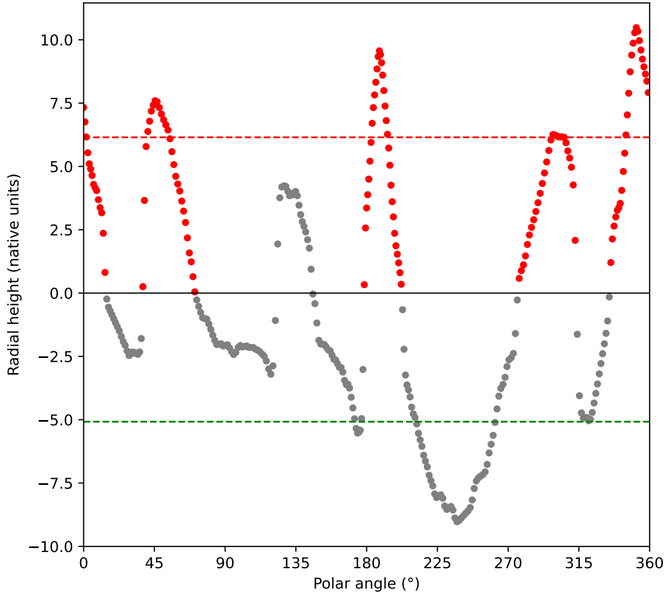

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

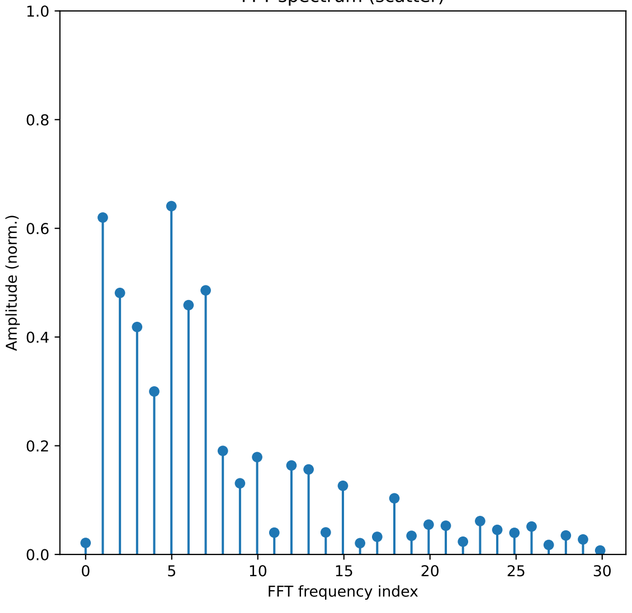

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

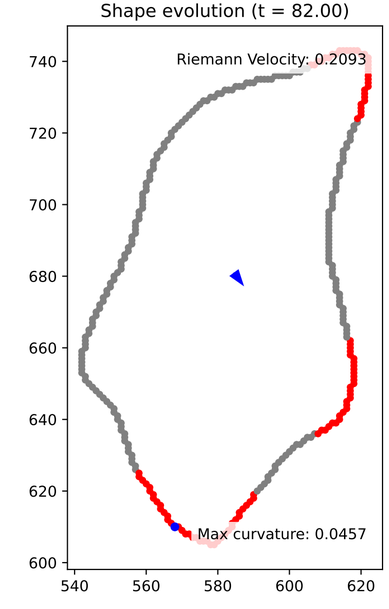

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

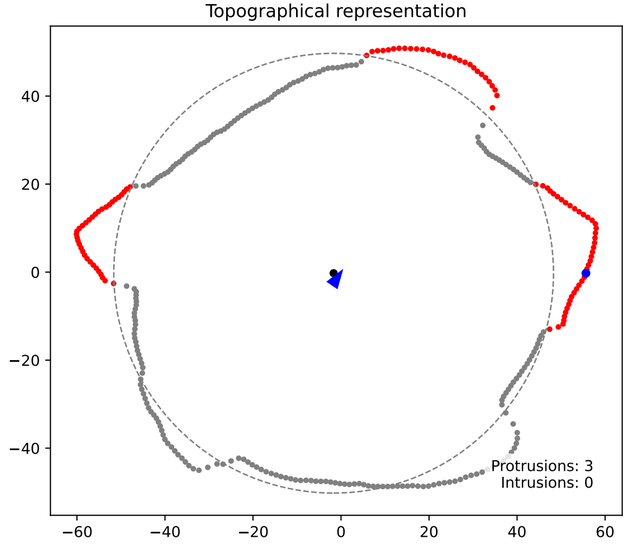

Shape evolution (t = 81.00)
Riemann Velocity: 0.2179
Max curvature: 0.0428

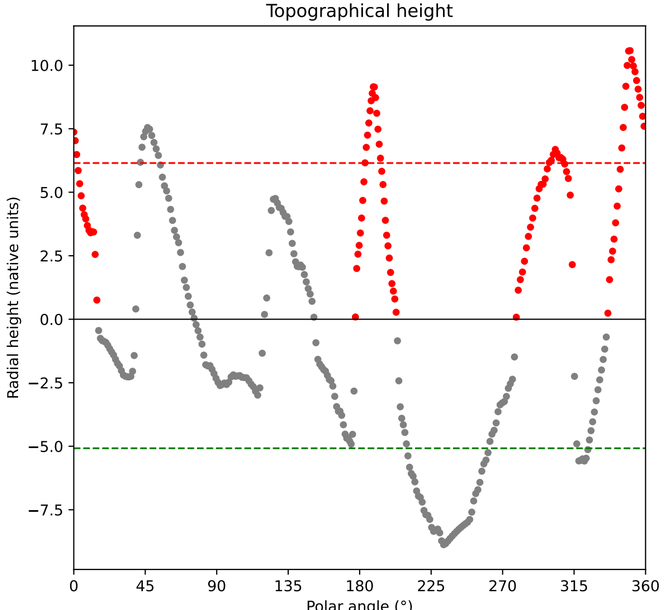

Topographical representation
Protrusions: 4
Intrusions: 0

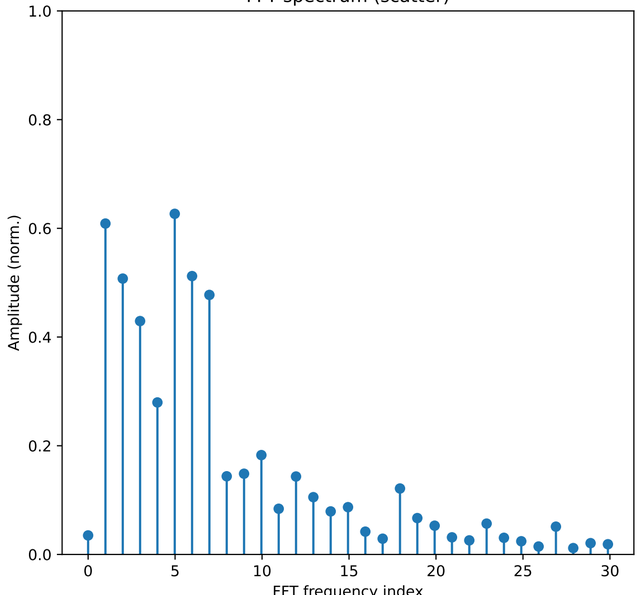

Topographical height
Radial height (native units)
Polar angle (°)

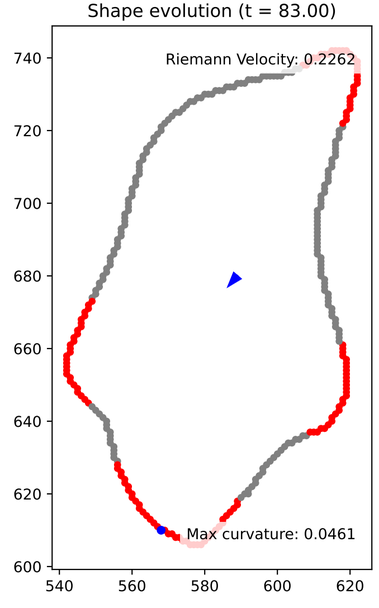

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index

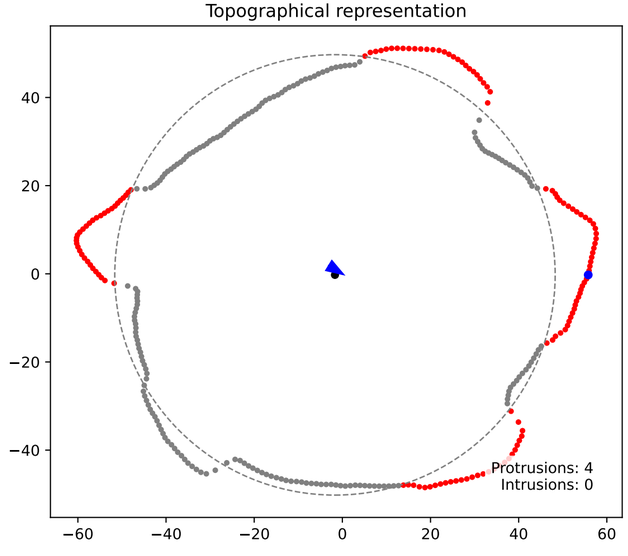

Shape evolution (t = 82.00)
Riemann Velocity: 0.2093
Max curvature: 0.0457
740
720
700
680
660
640
620
600
540
560
580
600
620

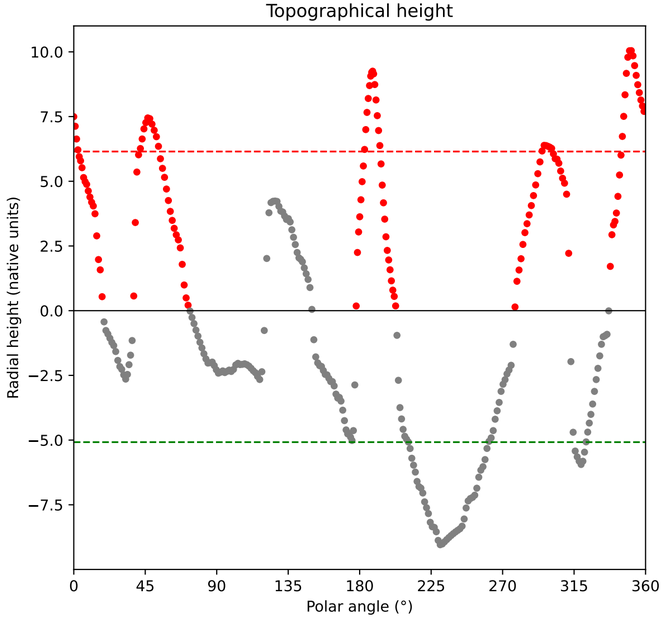

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

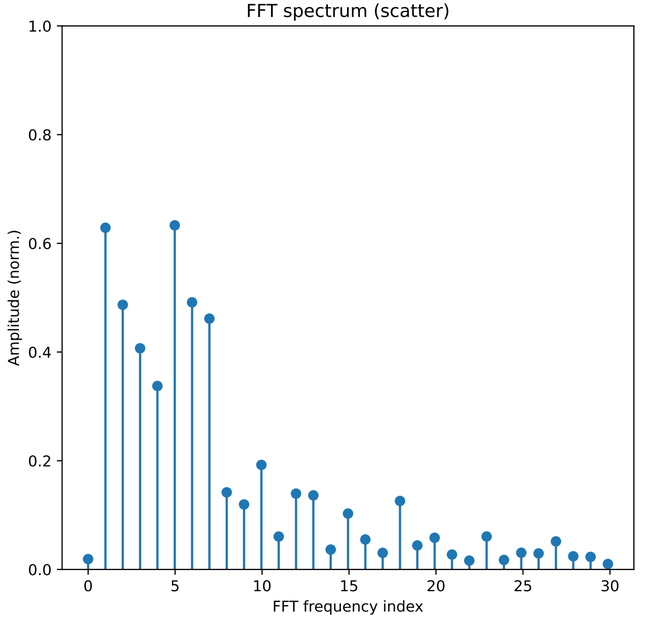

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

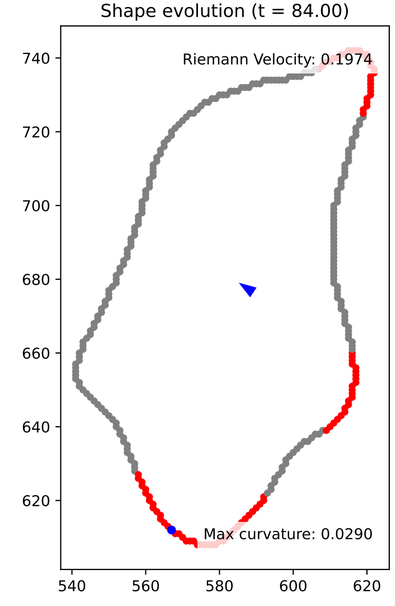

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

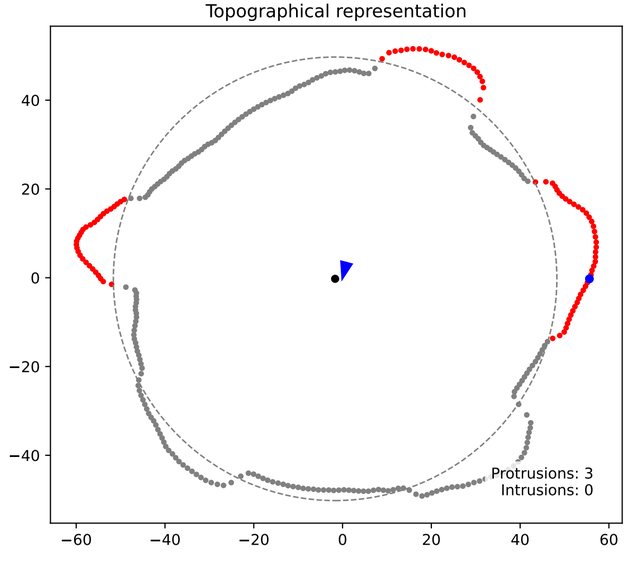

Shape evolution (t = 83.00)
Riemann Velocity: 0.2262
Max curvature: 0.0461
740
720
700
680
660
640
620
600
540
560
580
600
620

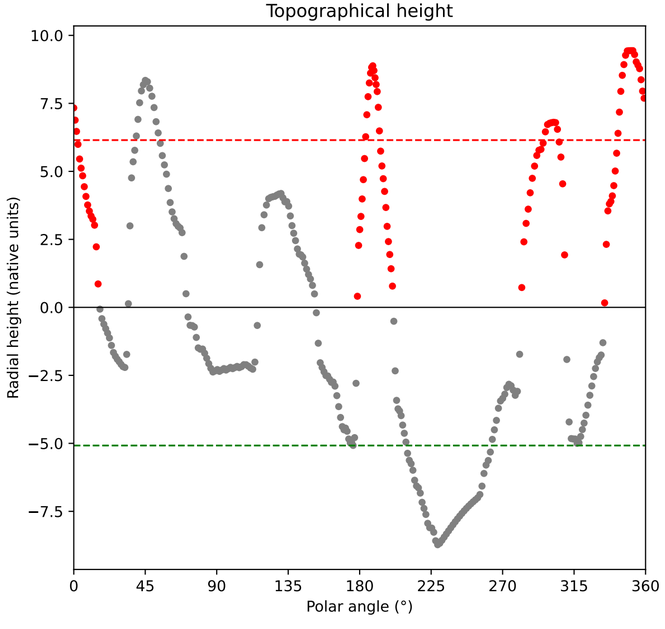

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

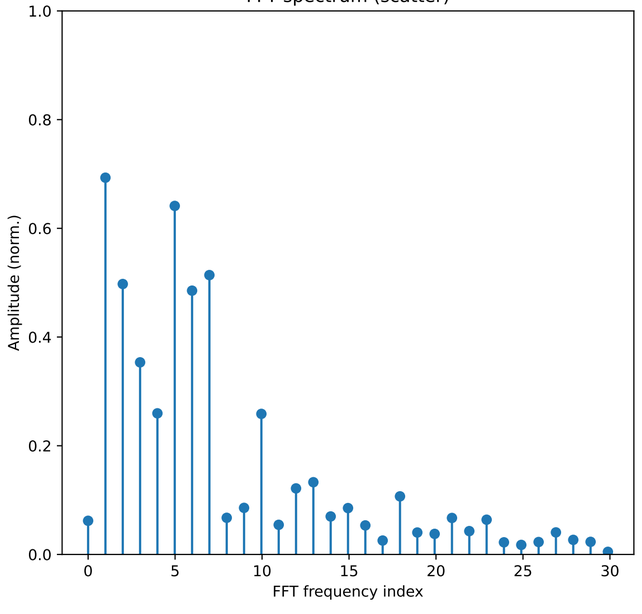

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

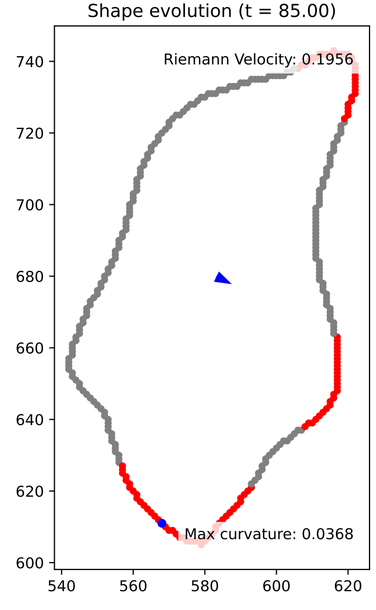

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

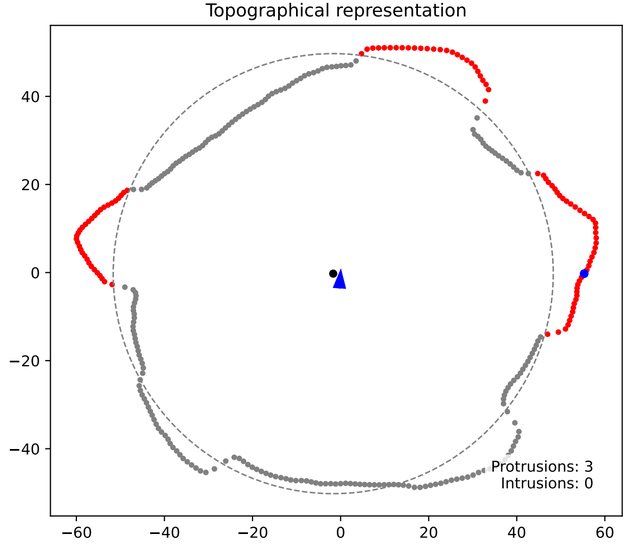

Shape evolution (t = 84.00)
Riemann Velocity: 0.1974
Max curvature: 0.0290
740
720
700
680
660
640
620
540
560
580
600
620

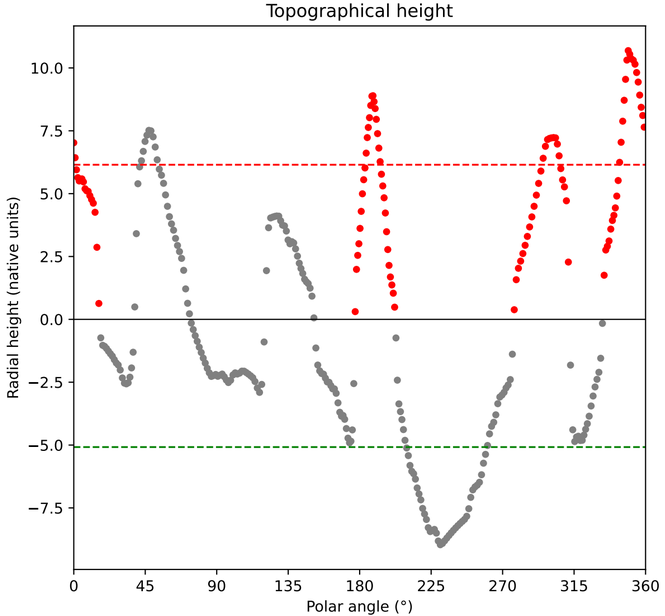

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

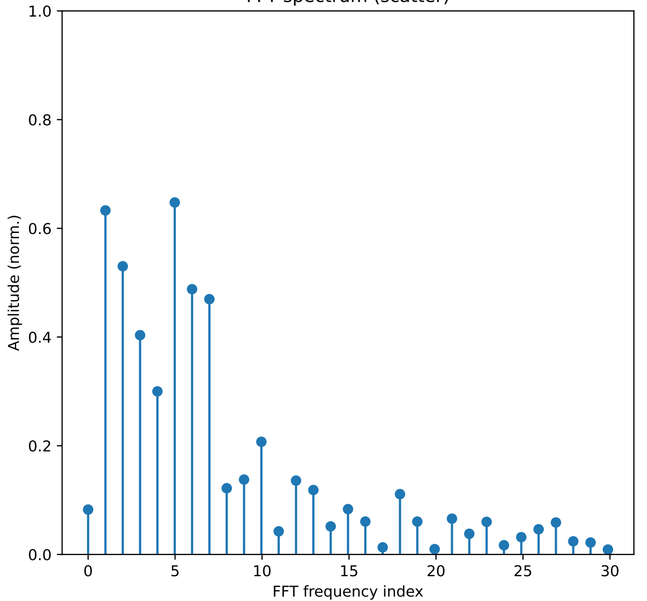

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

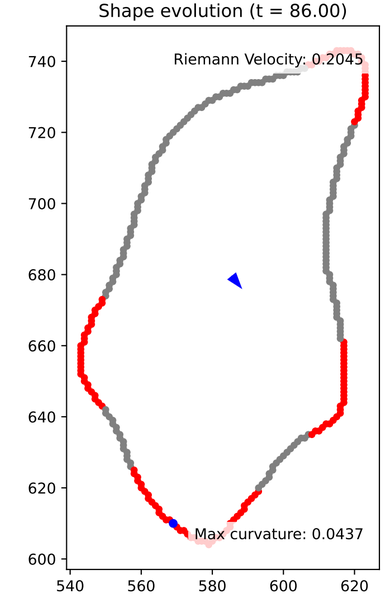

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

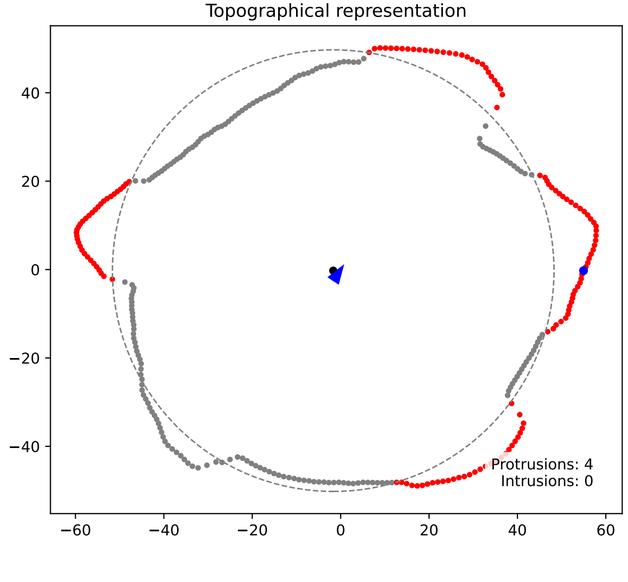

Shape evolution (t = 85.00)
Riemann Velocity: 0.1956
Max curvature: 0.0368
740
720
700
680
660
640
620
600
540
560
580
600
620

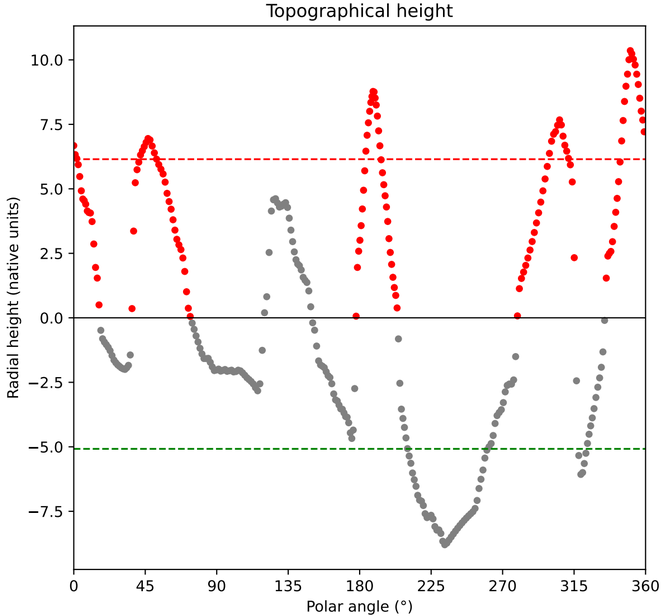

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

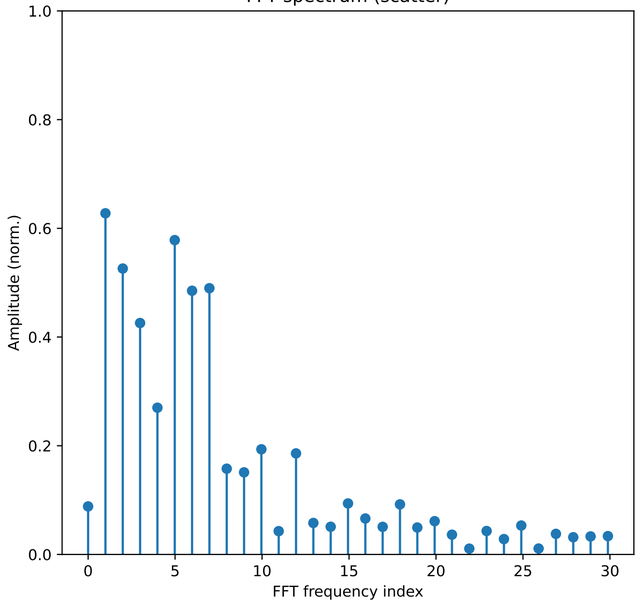

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

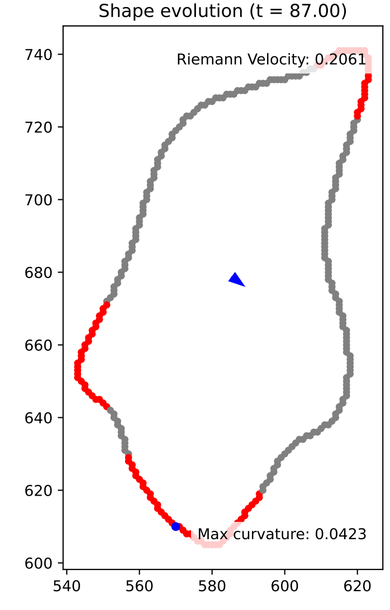

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

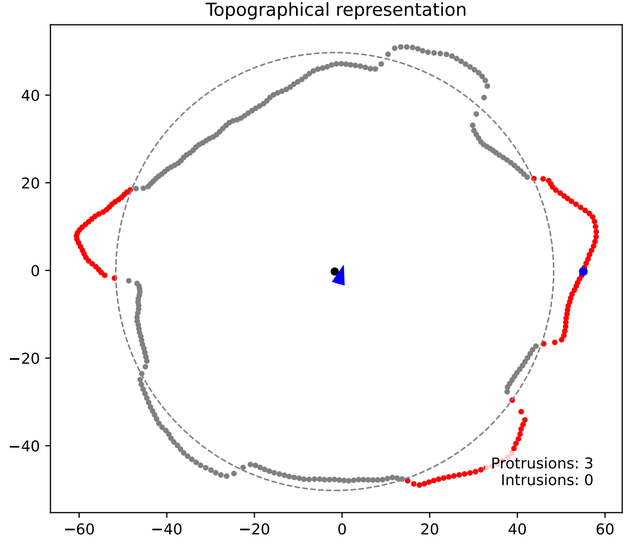

Shape evolution (t = 86.00)
Riemann Velocity: 0.2045
Max curvature: 0.0437
740
720
700
680
660
640
620
600
540
560
580
600
620

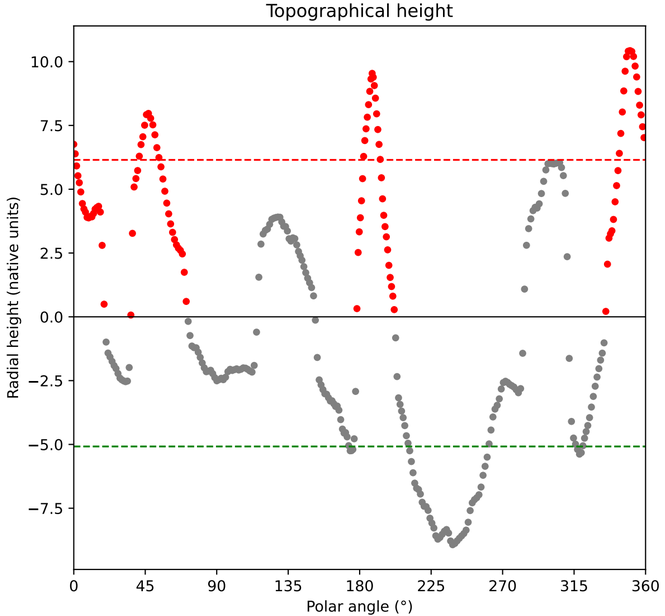

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

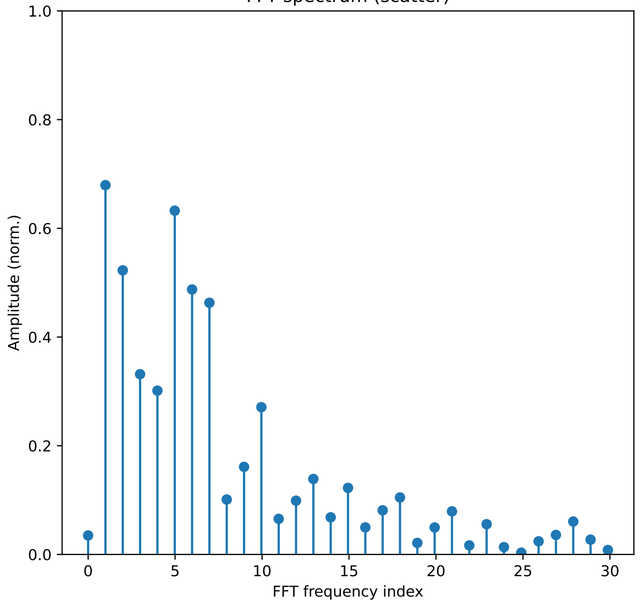

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

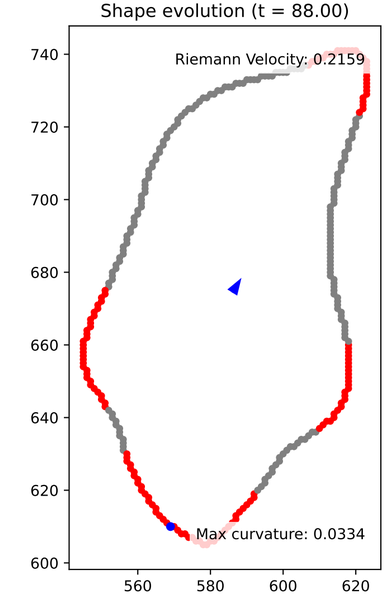

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

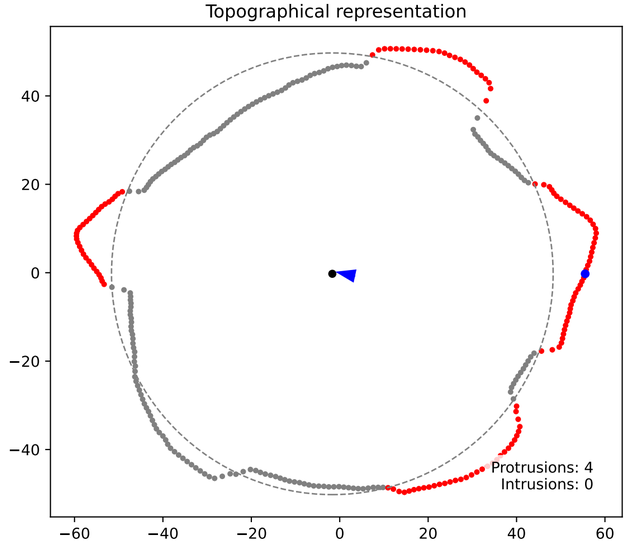

Shape evolution (t = 87.00)
Riemann Velocity: 0.2061
Max curvature: 0.0423
740
720
700
680
660
640
620
600
540
560
580
600
620

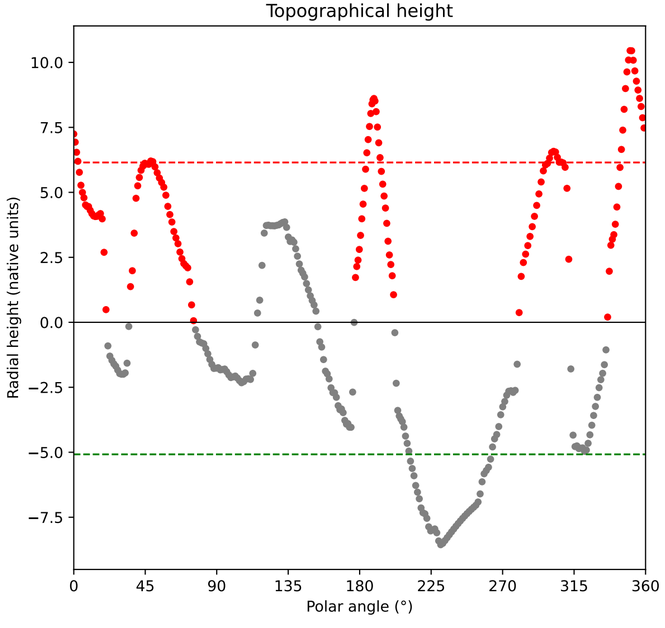

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

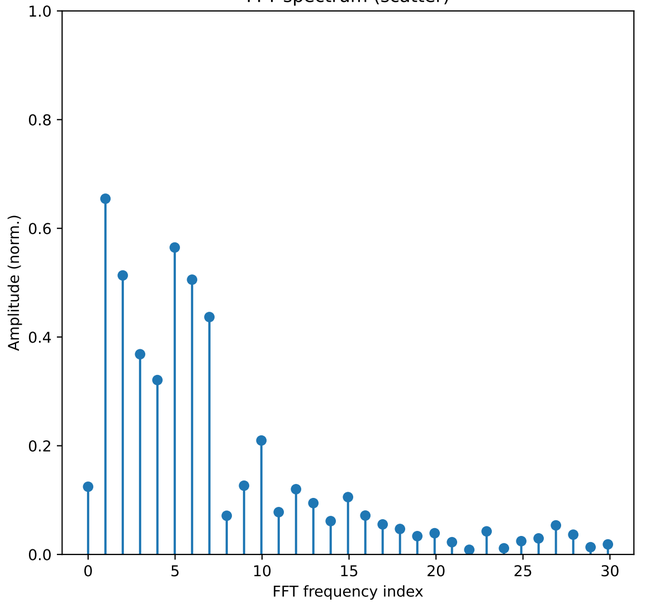

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

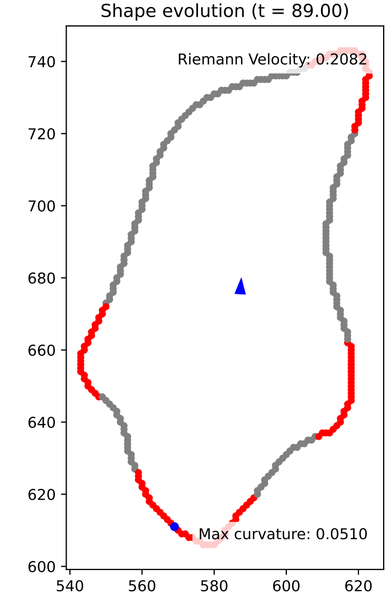

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

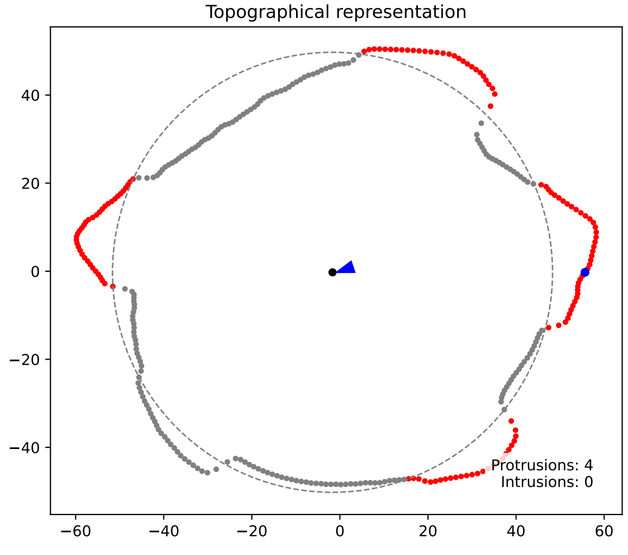

Shape evolution (t = 88.00)
Riemann Velocity: 0.2159
Max curvature: 0.0334
740
720
700
680
660
640
620
600
560
580
600
620

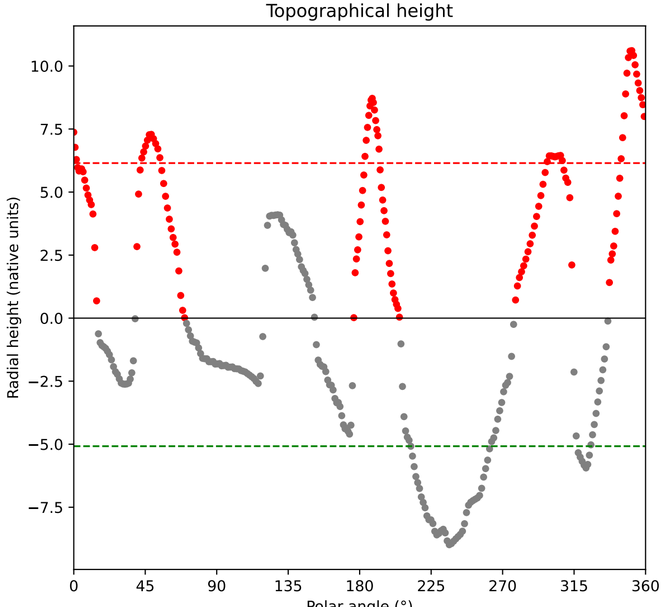

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

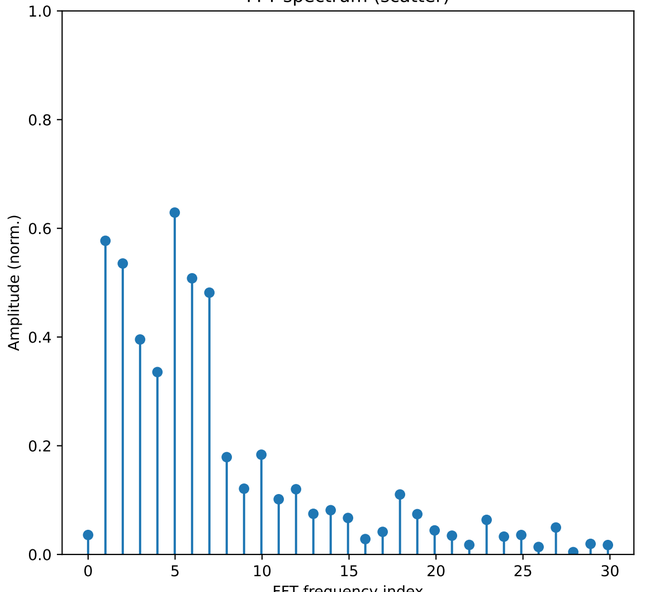

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

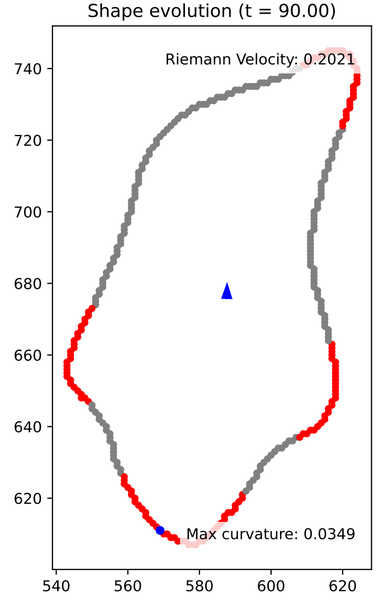

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

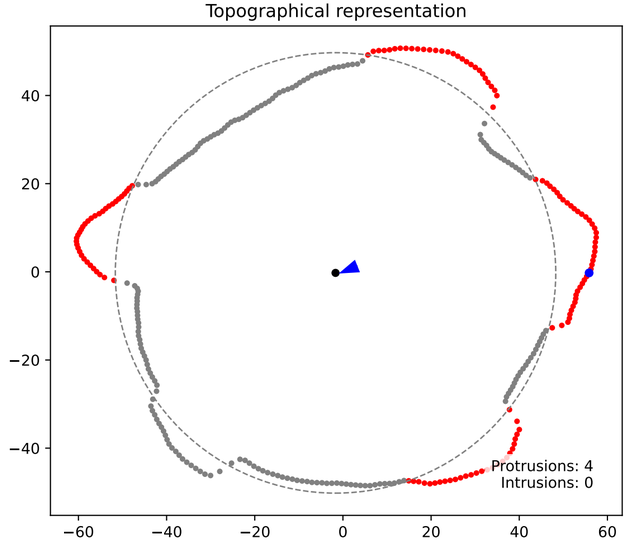

Shape evolution (t = 89.00)
Riemann Velocity: 0.2082
Max curvature: 0.0510
740
720
700
680
660
640
620
600
540
560
580
600
620

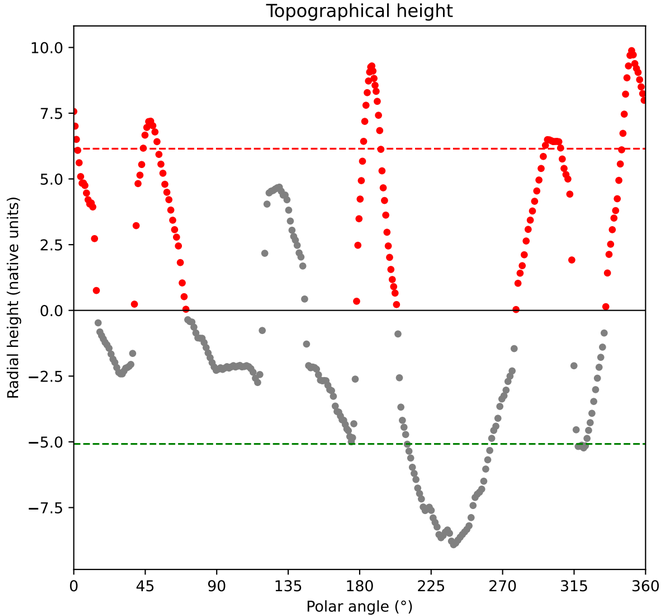

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

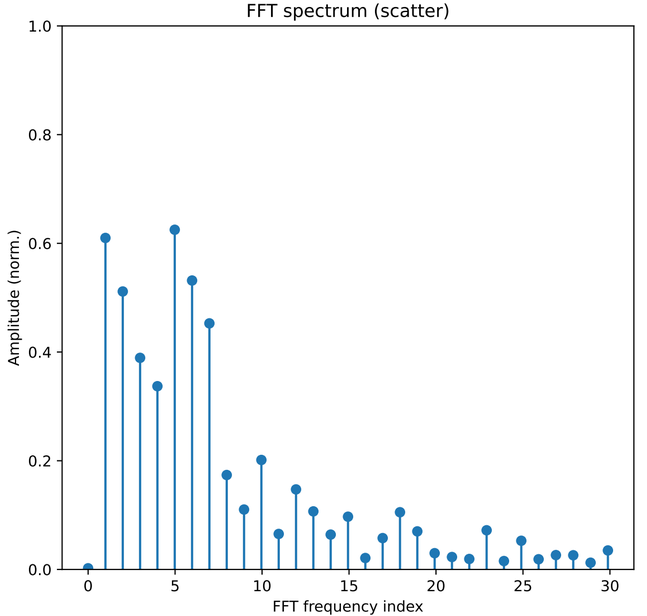

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

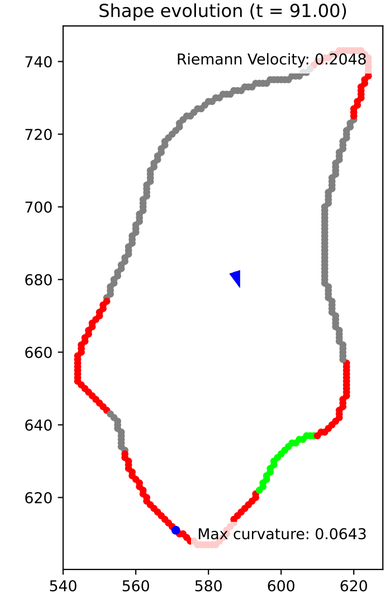

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

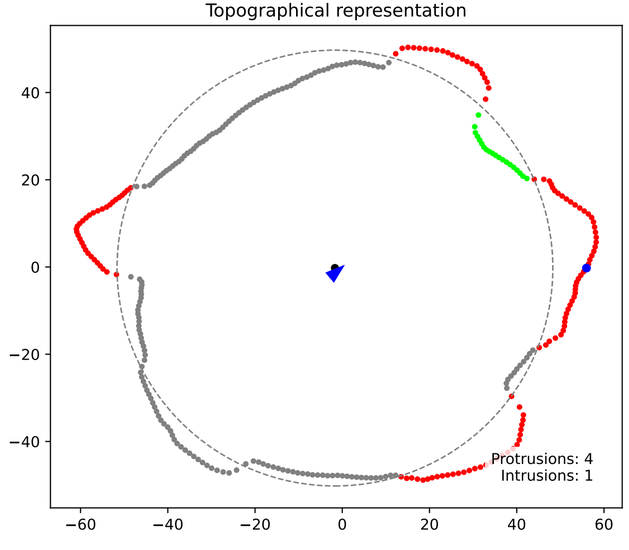

Shape evolution (t = 90.00)
Riemann Velocity: 0.2021
Max curvature: 0.0349
740
720
700
680
660
640
620
540
560
580
600
620

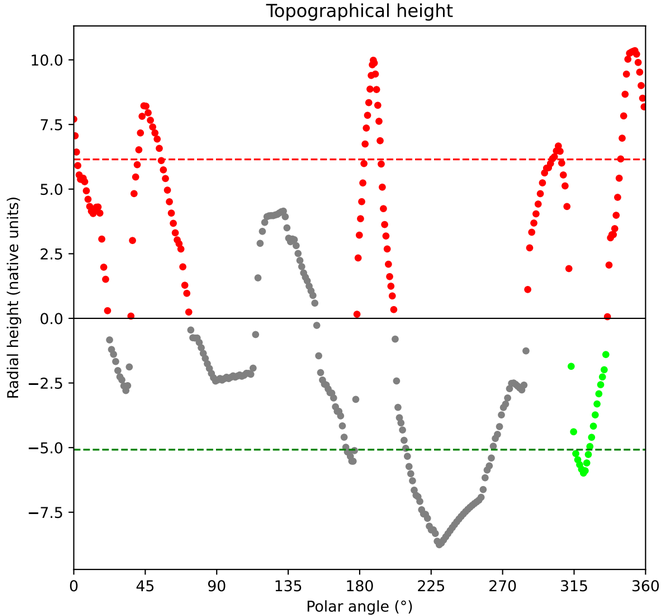

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

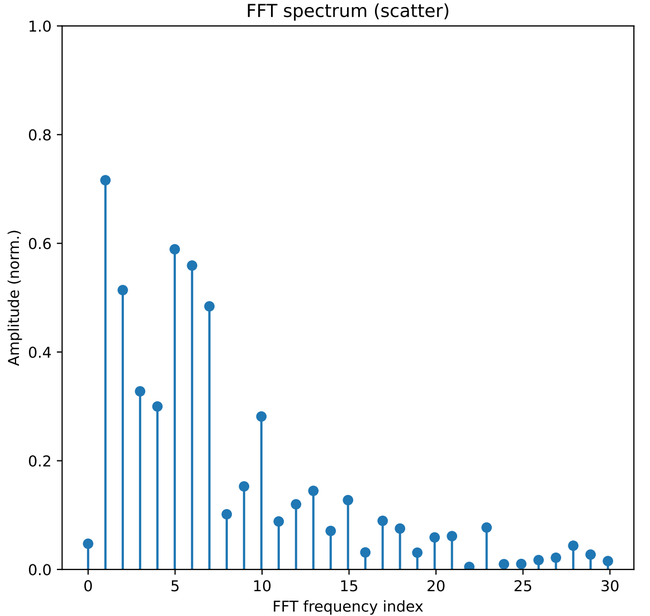

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

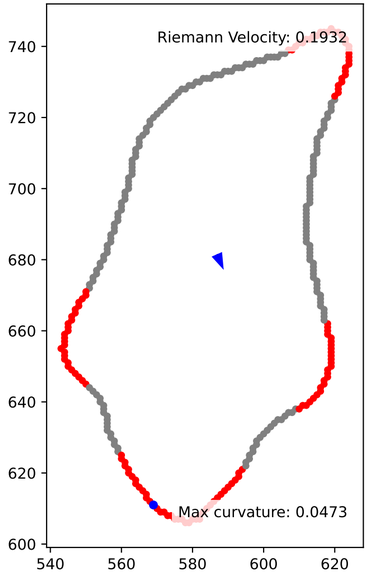

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

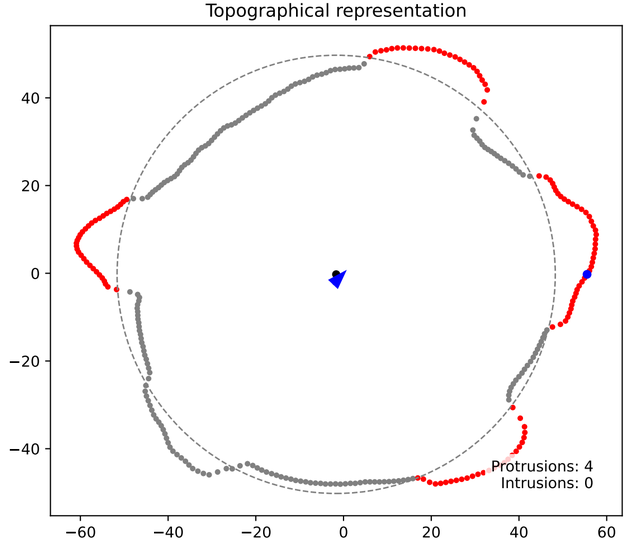

Shape evolution (t = 91.00)
Riemann Velocity: 0.2048
Max curvature: 0.0643
740
720
700
680
660
640
620
540
560
580
600
620

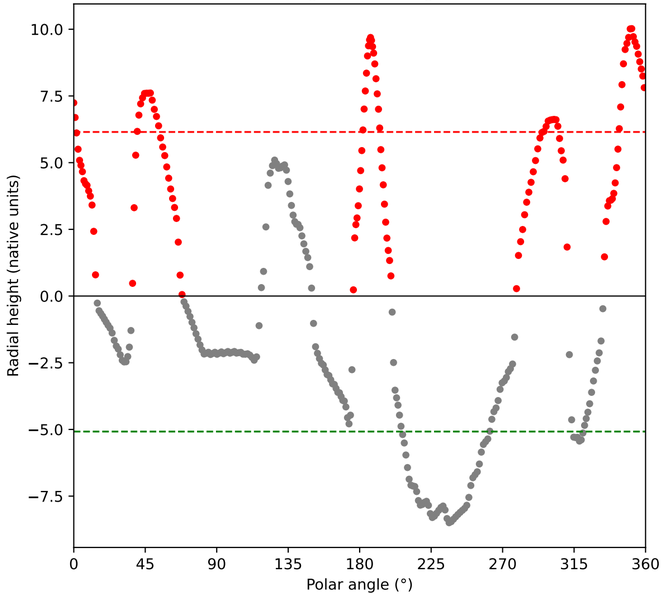

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

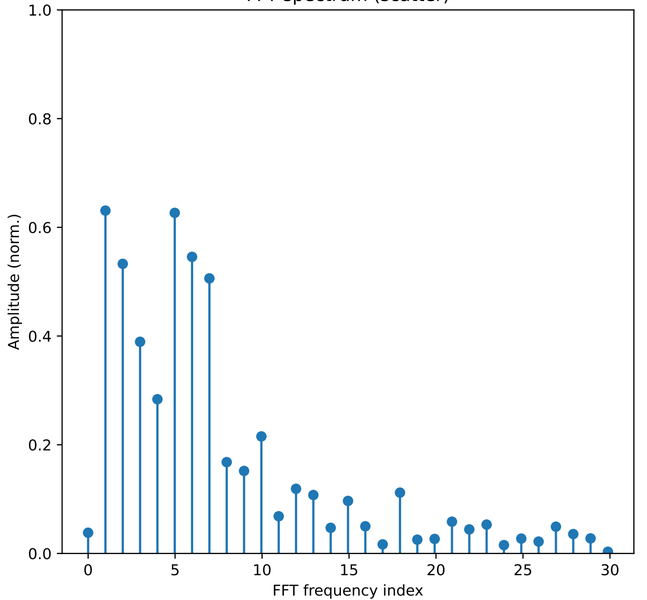

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

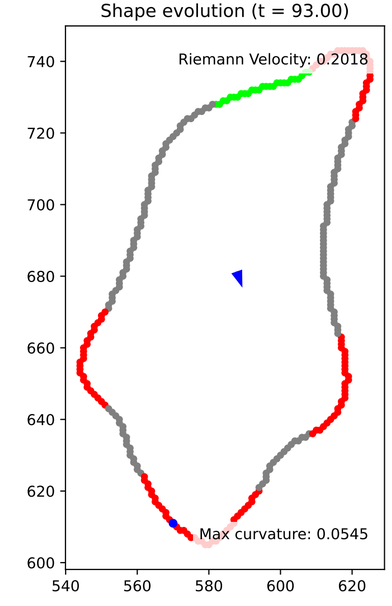

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

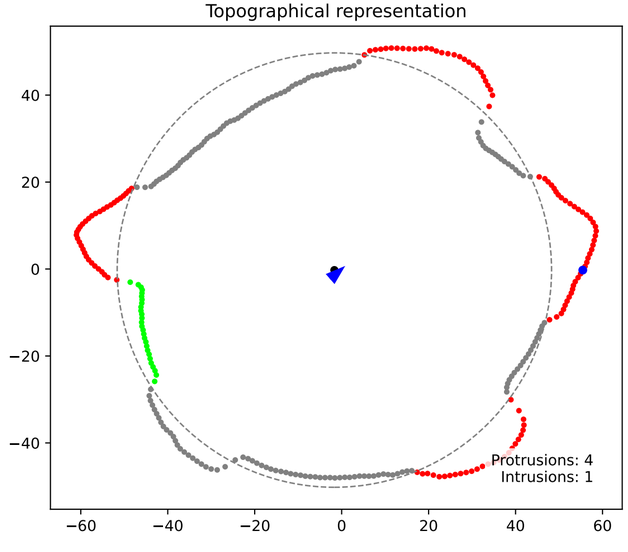

Shape evolution (t = 92.00)
Riemann Velocity: 0.1932
Max curvature: 0.0473
740
720
700
680
660
640
620
600
540
560
580
600
620

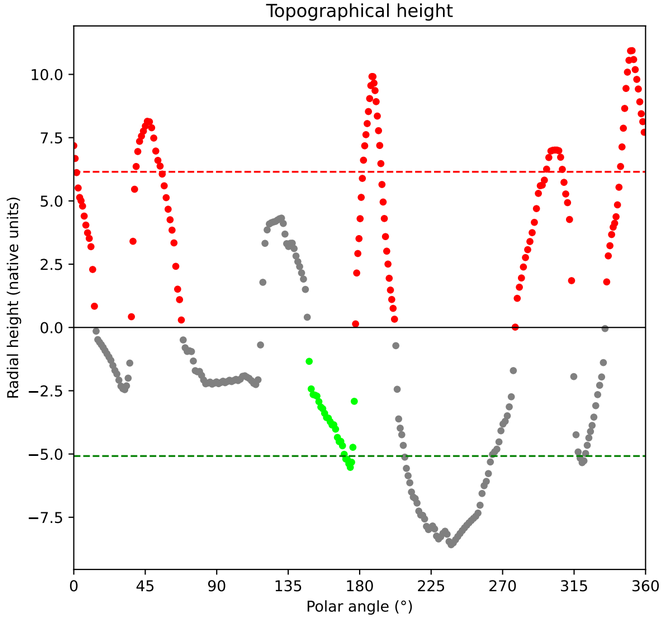

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

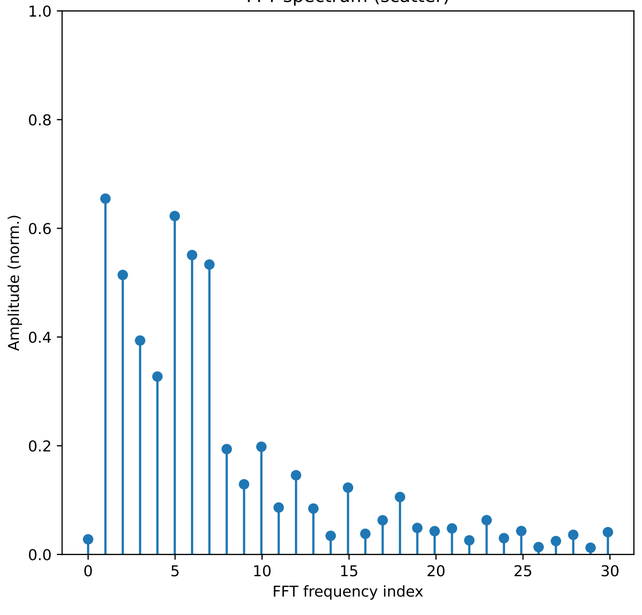

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

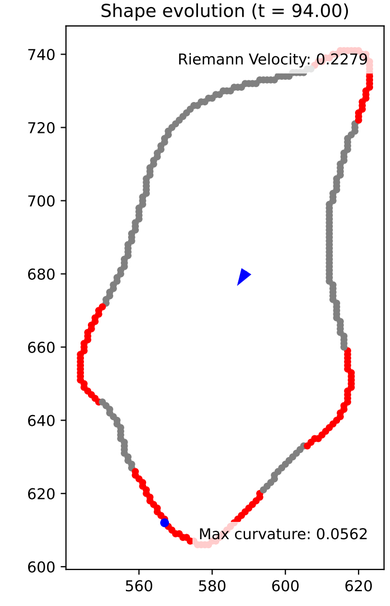

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

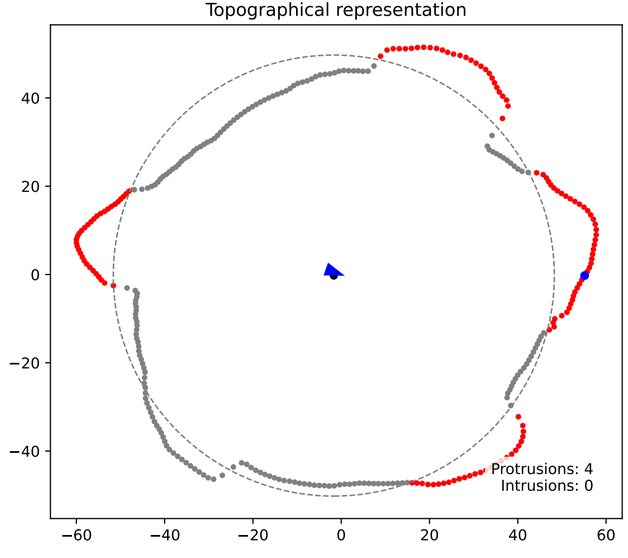

Shape evolution (t = 93.00)
Riemann Velocity: 0.2018
Max curvature: 0.0545
740
720
700
680
660
640
620
600
540
560
580
600
620

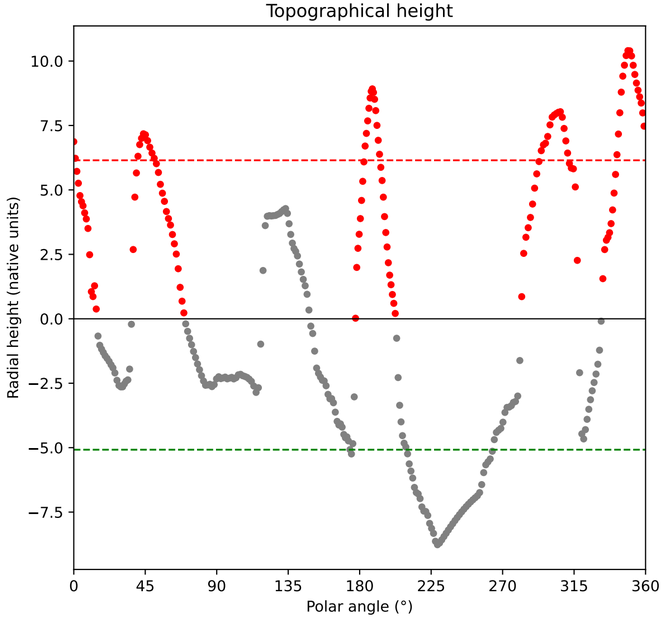

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

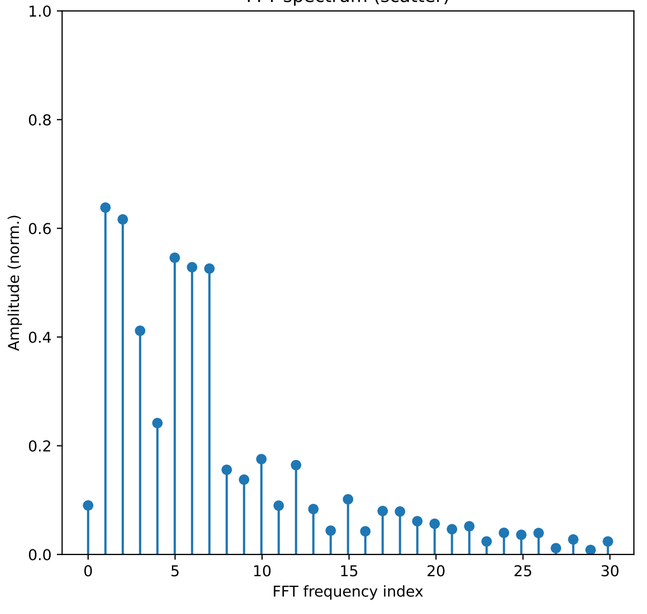

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

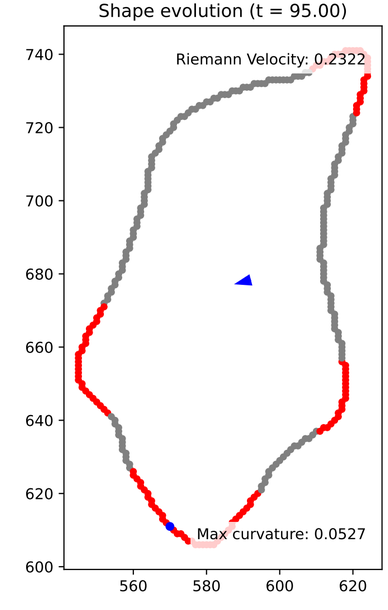

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

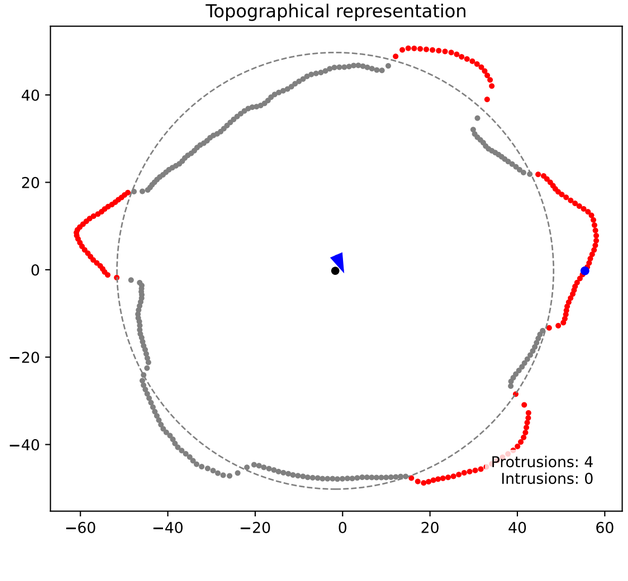

Shape evolution (t = 94.00)
Riemann Velocity: 0.2279
Max curvature: 0.0562
740
720
700
680
660
640
620
600
560
580
600
620

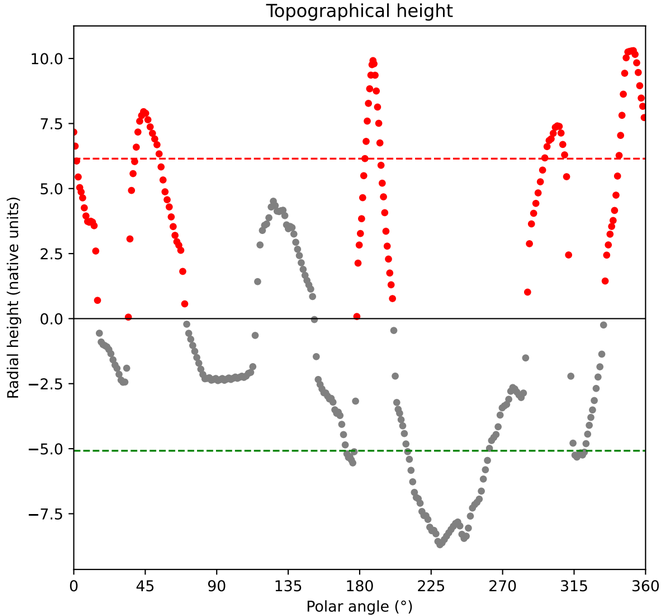

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

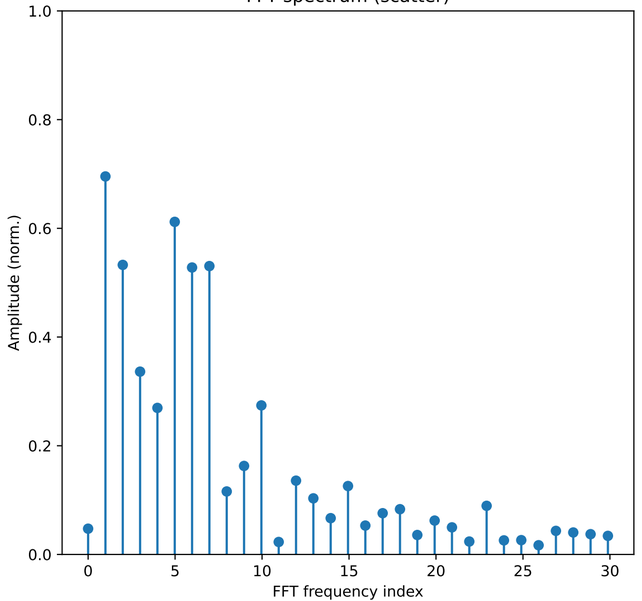

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

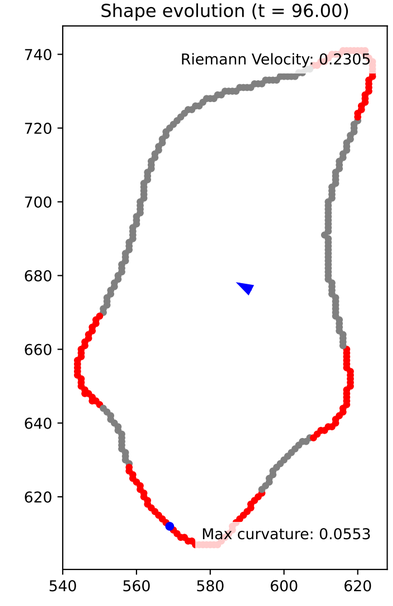

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

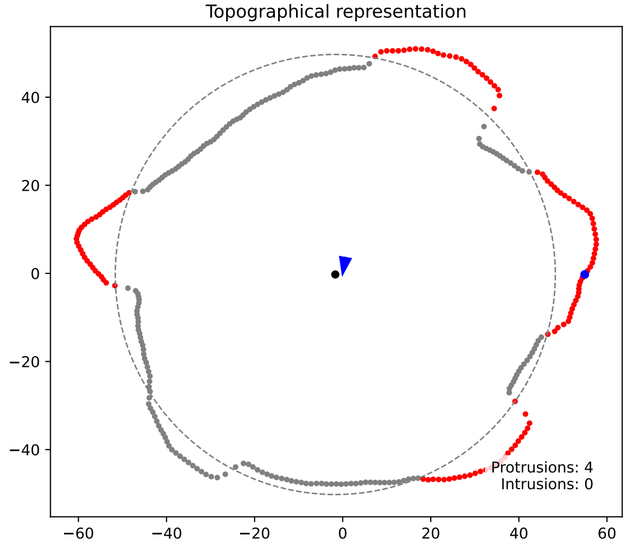

Shape evolution (t = 95.00)
Riemann Velocity: 0.2322
Max curvature: 0.0527
740
720
700
680
660
640
620
600
560
580
600
620

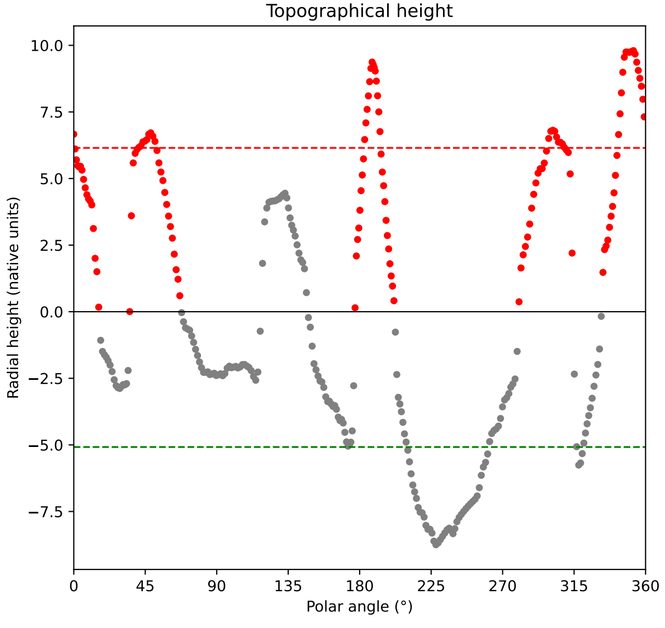

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

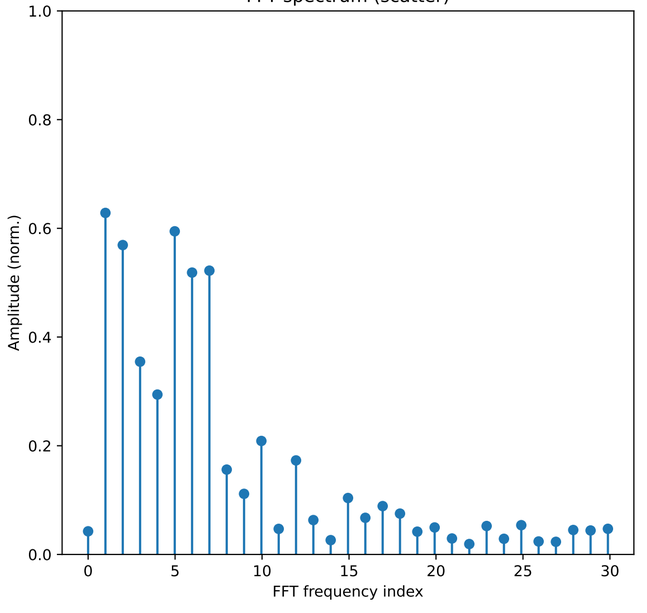

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

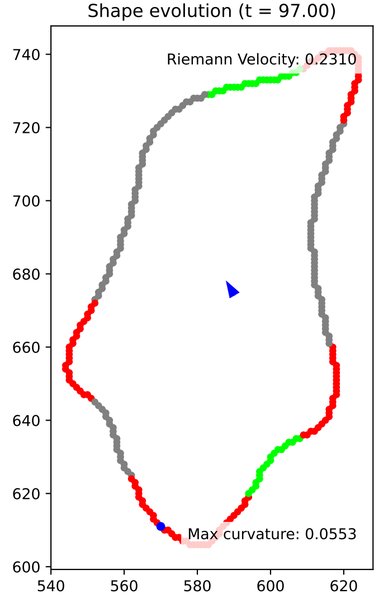

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

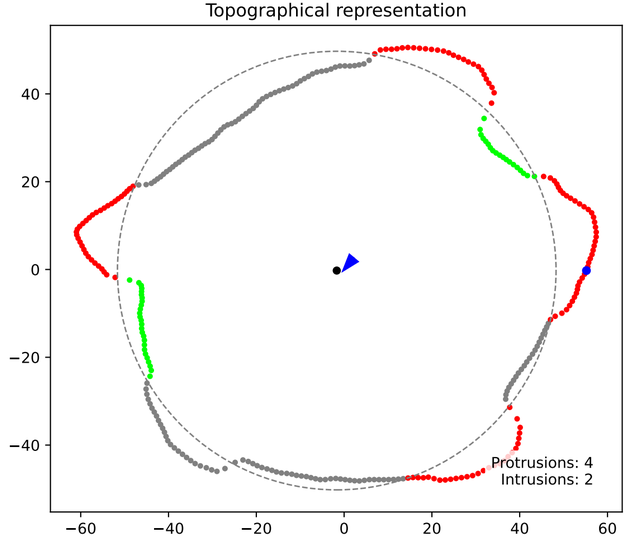

Shape evolution (t = 96.00)
Riemann Velocity: 0.2305
Max curvature: 0.0553
740
720
700
680
660
640
620
540
560
580
600
620

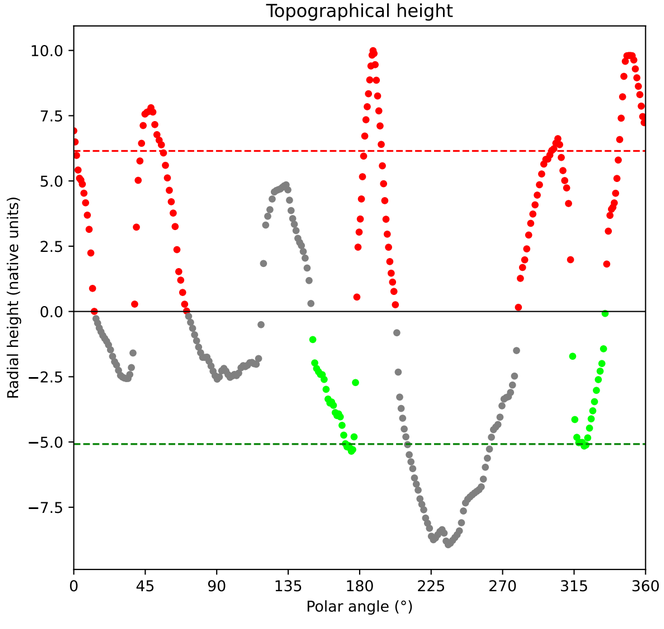

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

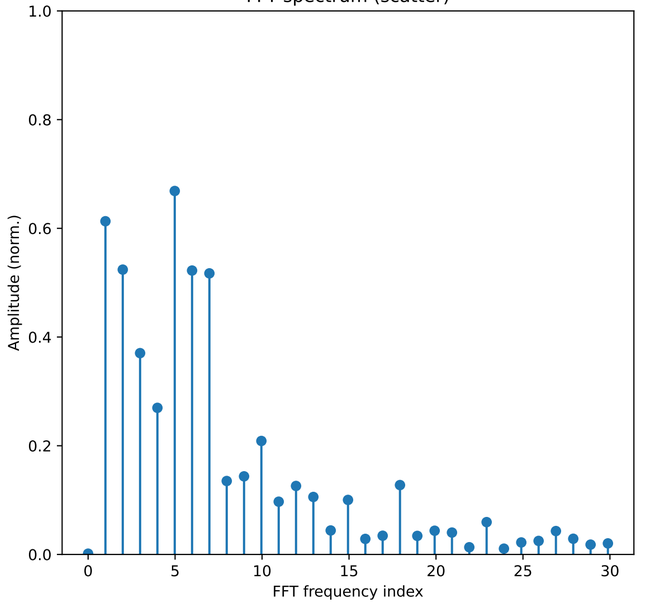

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

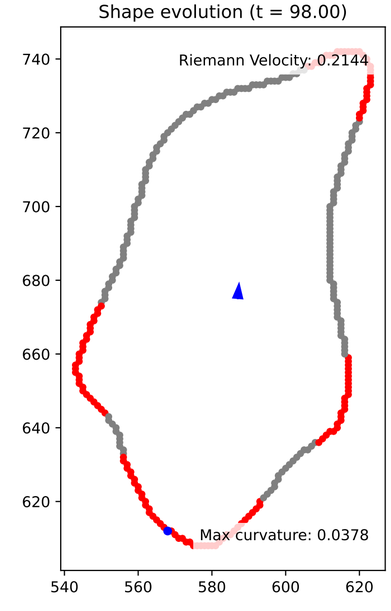

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

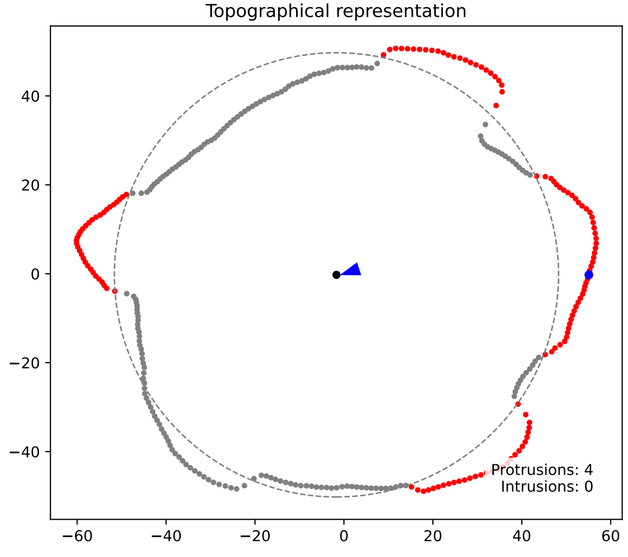

Shape evolution (t = 97.00)
Riemann Velocity: 0.2310
Max curvature: 0.0553
740
720
700
680
660
640
620
600
540
560
580
600
620

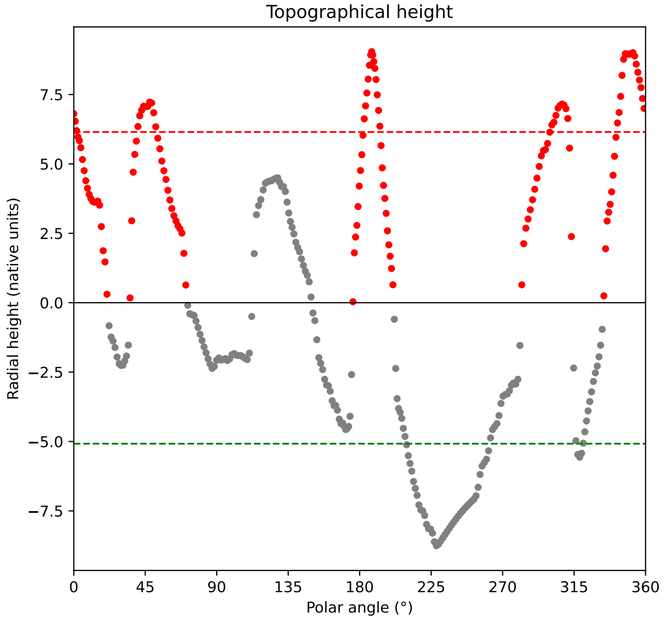

Topographical representation
Protrusions: 4
Intrusions: 2
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

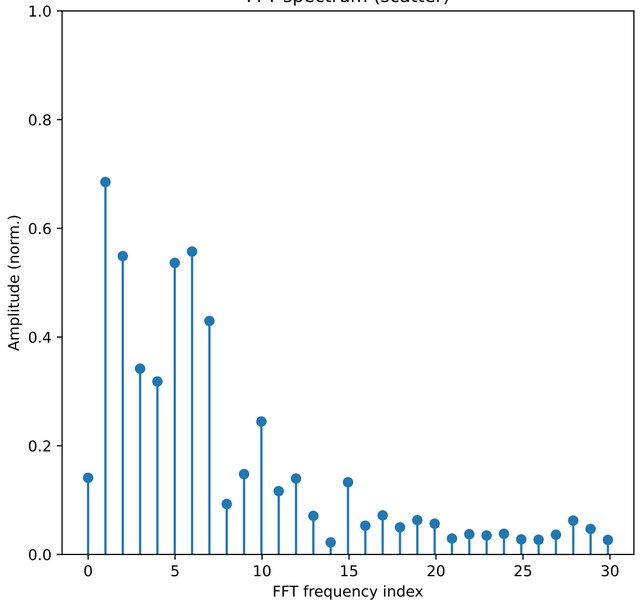

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

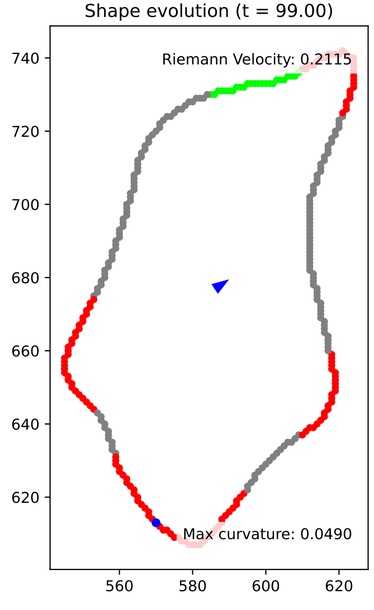

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

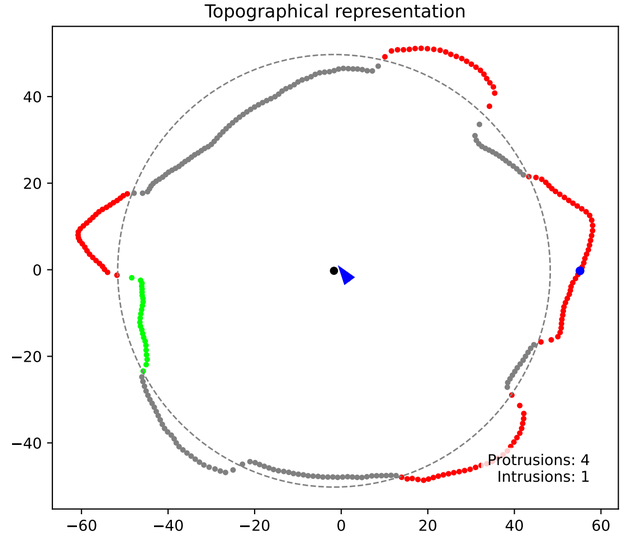

Shape evolution (t = 98.00)
Riemann Velocity: 0.2144
Max curvature: 0.0378
740
720
700
680
660
640
620
540
560
580
600
620

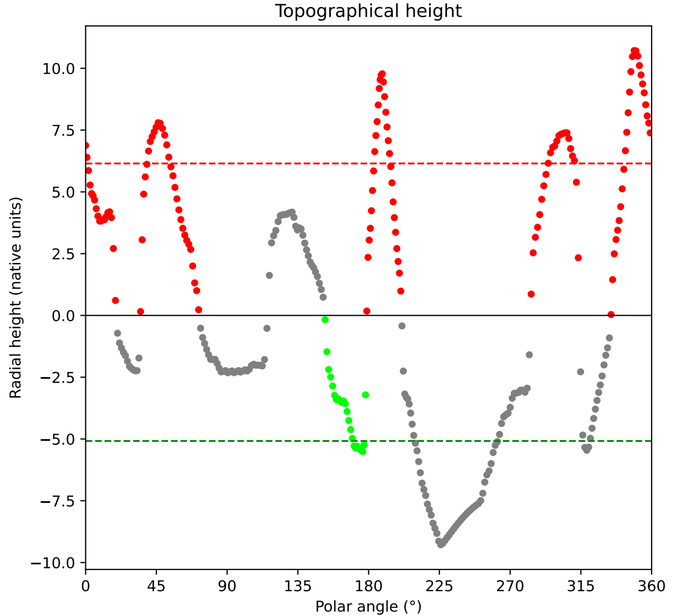

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

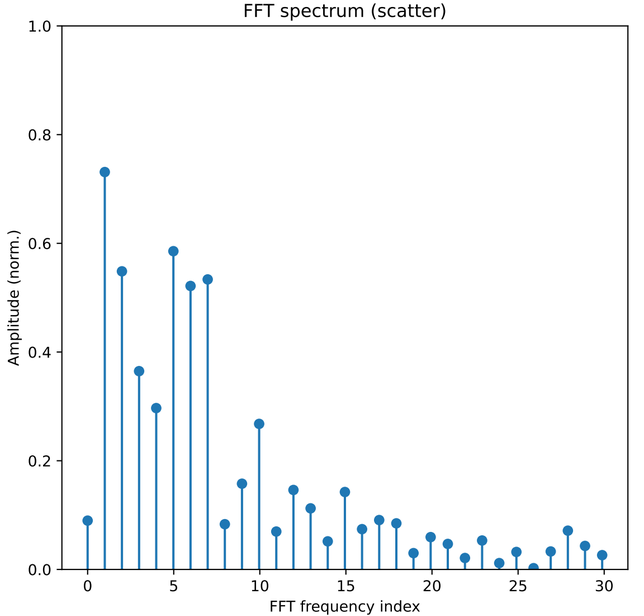

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

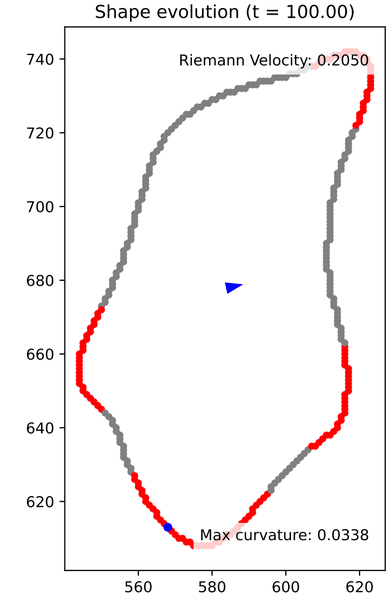

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

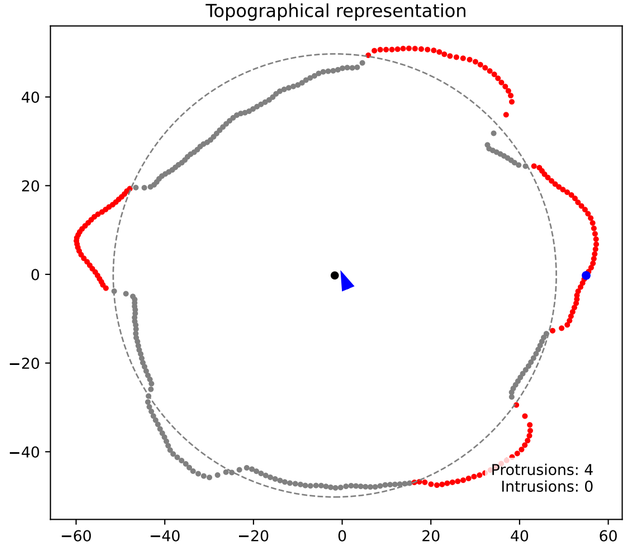

Shape evolution (t = 99.00)
Riemann Velocity: 0.2115
Max curvature: 0.0490
740
720
700
680
660
640
620
560
580
600
620

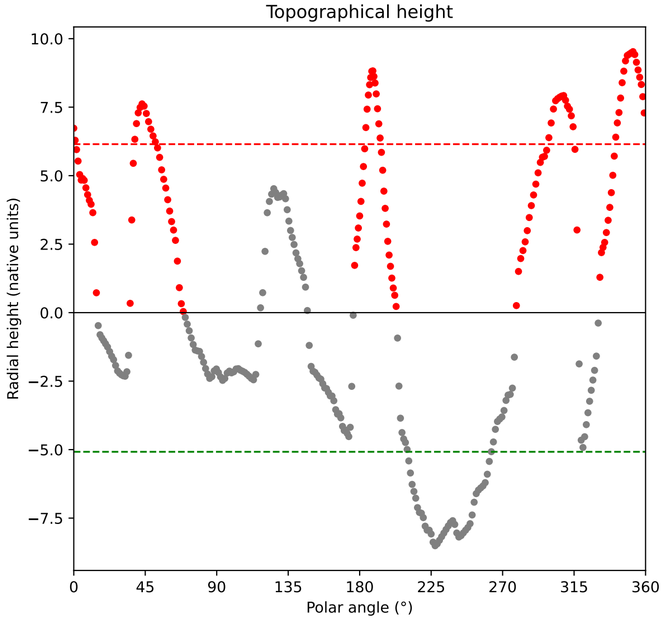

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

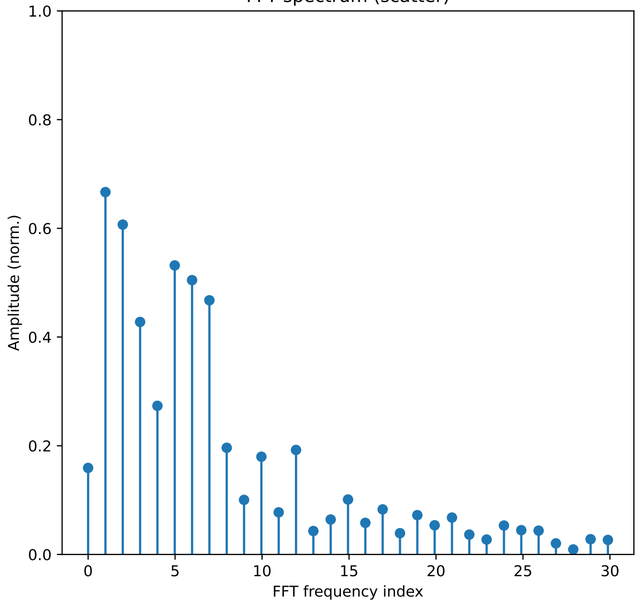

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

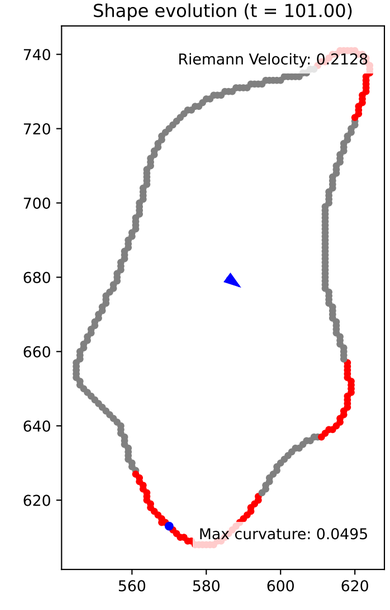

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

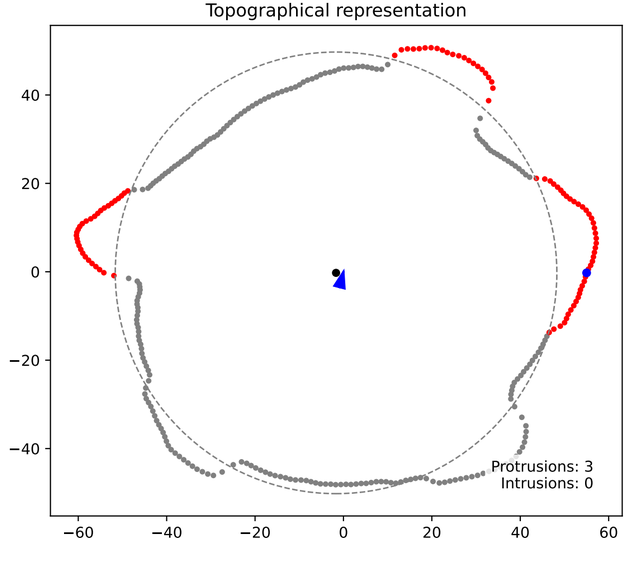

Shape evolution (t = 100.00)
Riemann Velocity: 0.2050
Max curvature: 0.0338
740
720
700
680
660
640
620
560
580
600
620

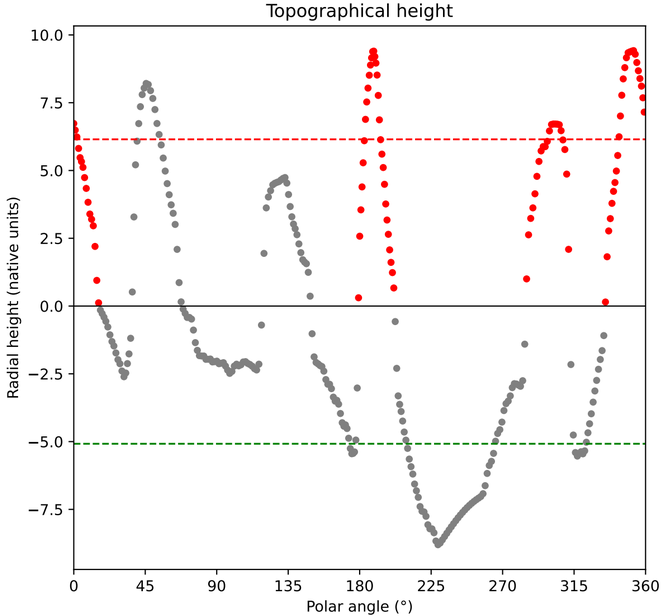

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

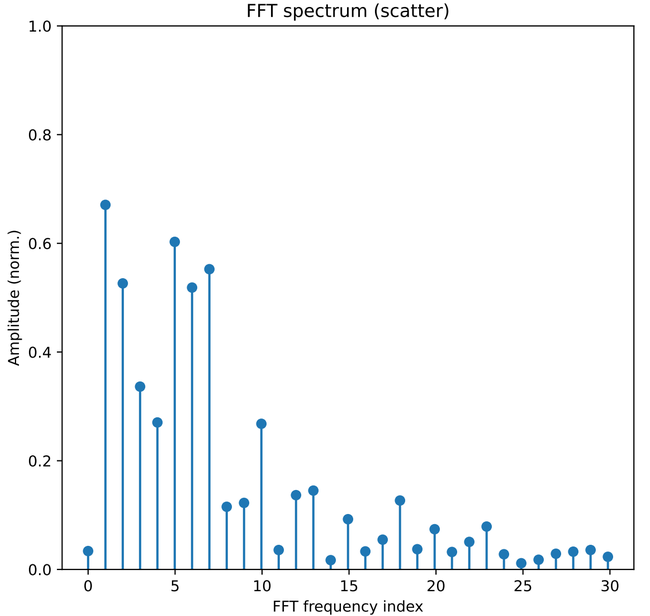

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

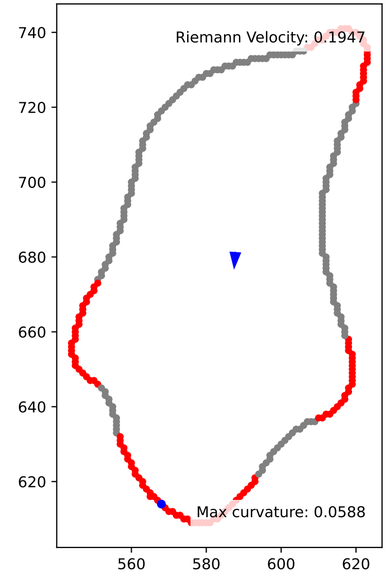

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

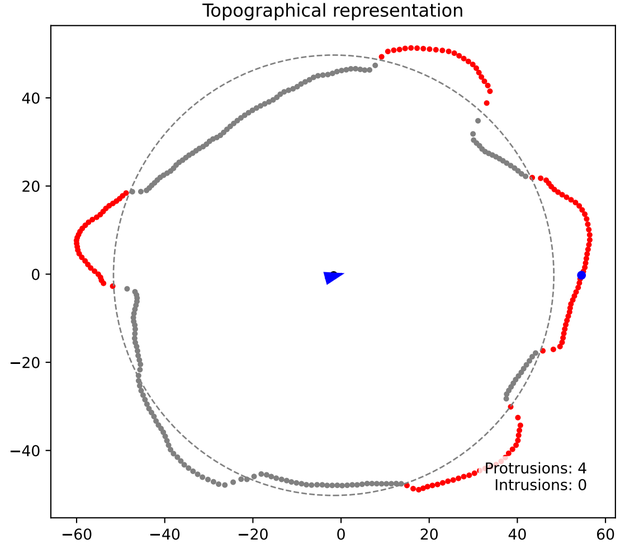

Shape evolution (t = 101.00)
Riemann Velocity: 0.2128
Max curvature: 0.0495
740
720
700
680
660
640
620
560
580
600
620

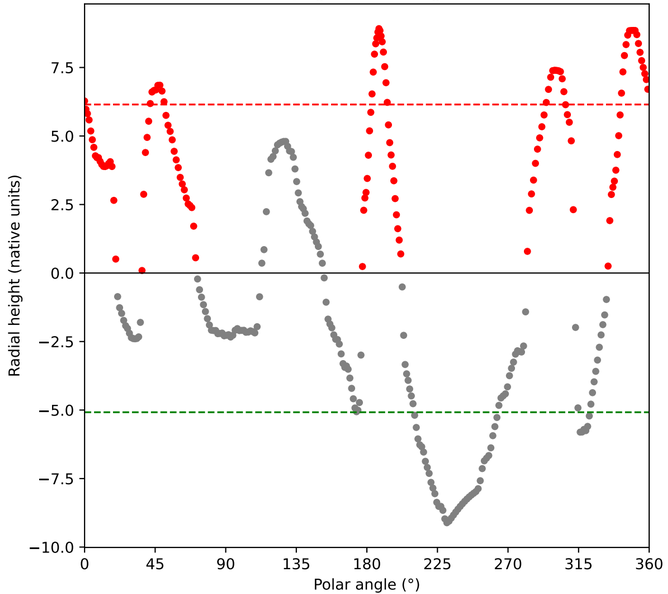

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

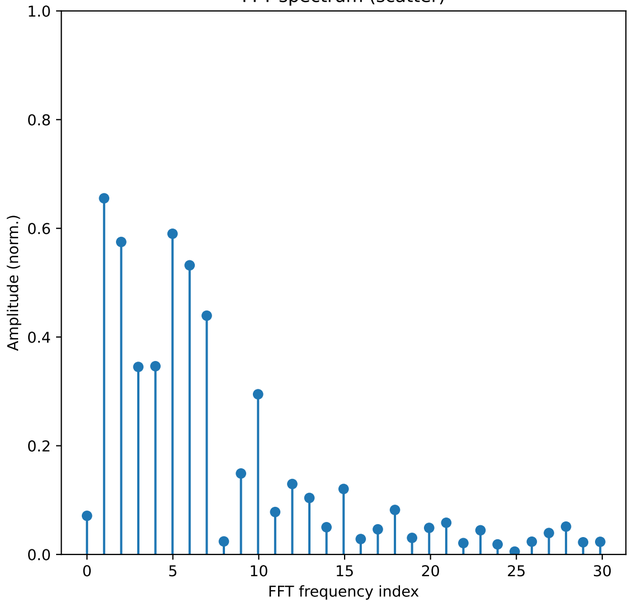

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

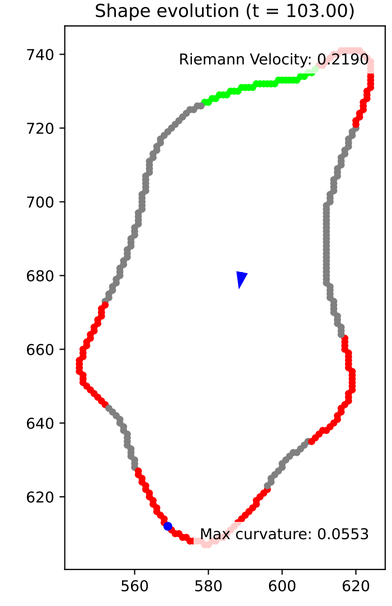

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

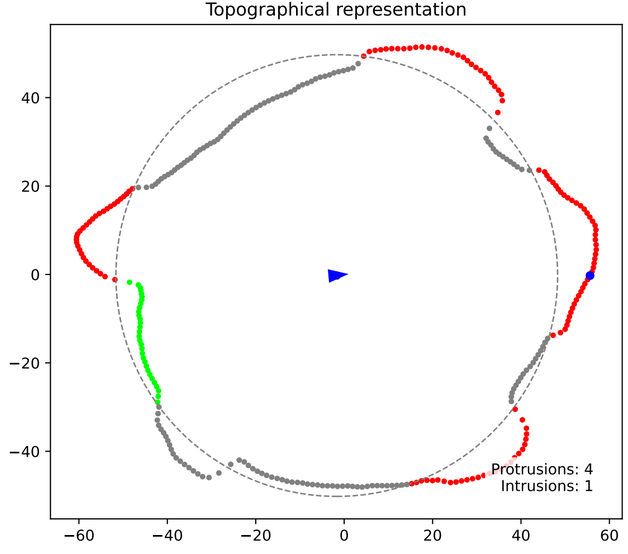

Shape evolution (t = 102.00)
Riemann Velocity: 0.1947
Max curvature: 0.0588
740
720
700
680
660
640
620
560
580
600
620

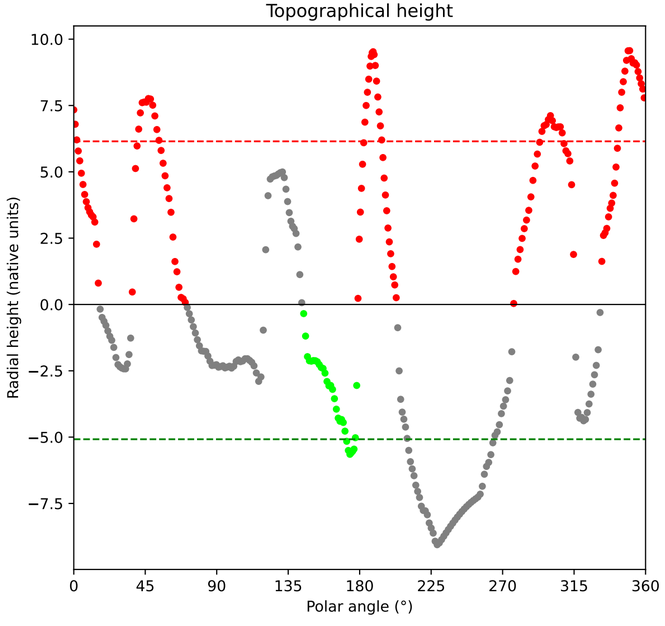

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

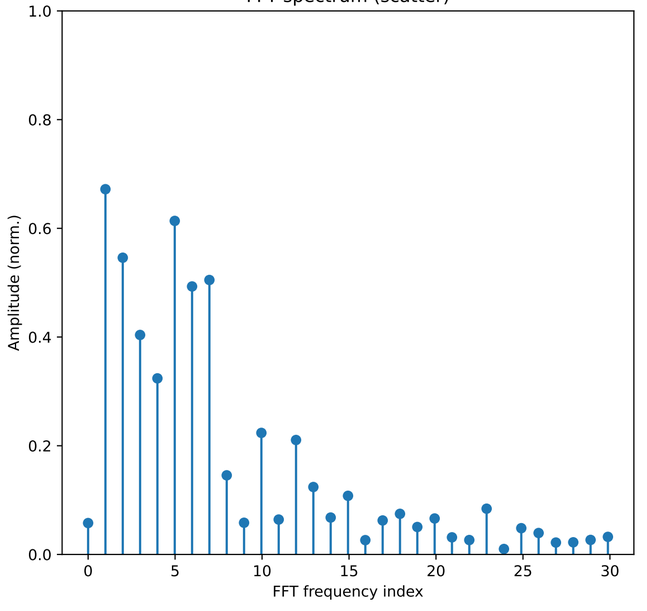

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

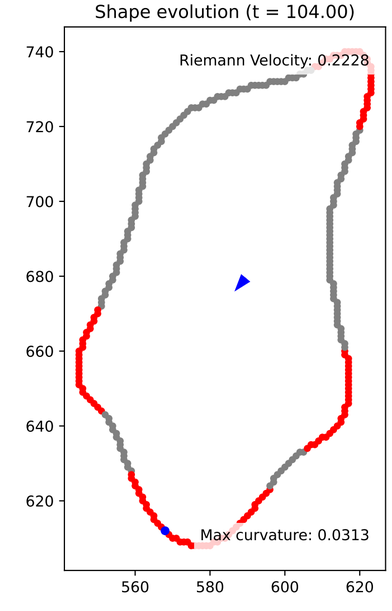

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

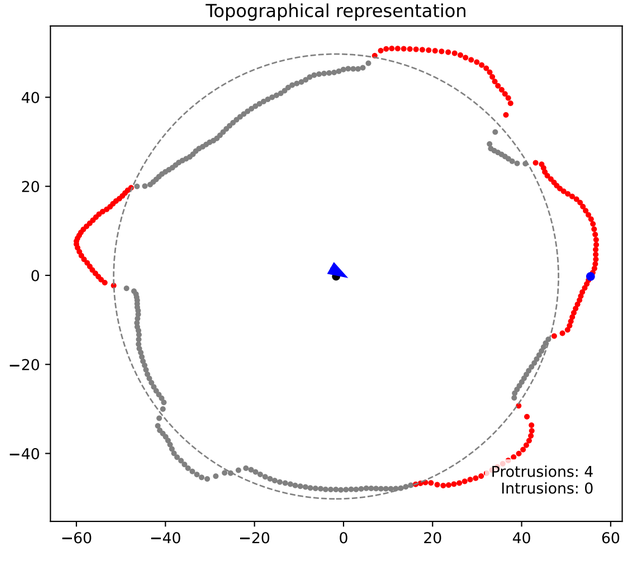

Shape evolution (t = 103.00)
Riemann Velocity: 0.2190
Max curvature: 0.0553
740
720
700
680
660
640
620
560
580
600
620

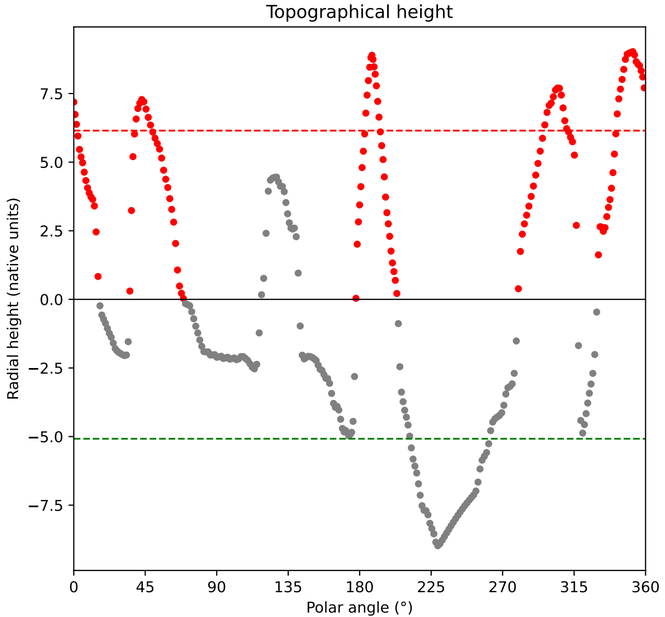

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

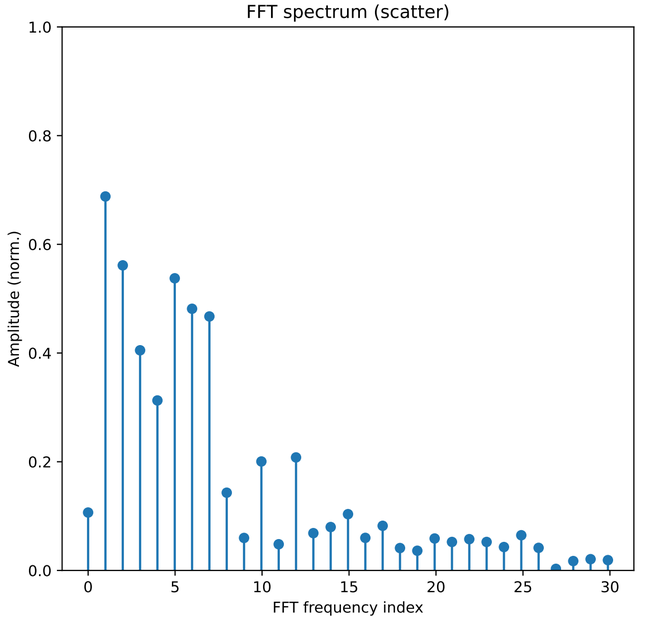

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

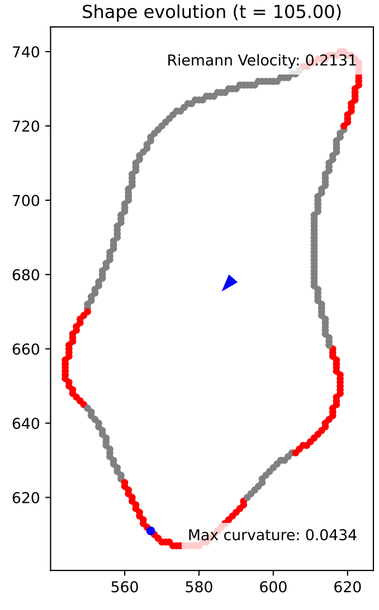

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

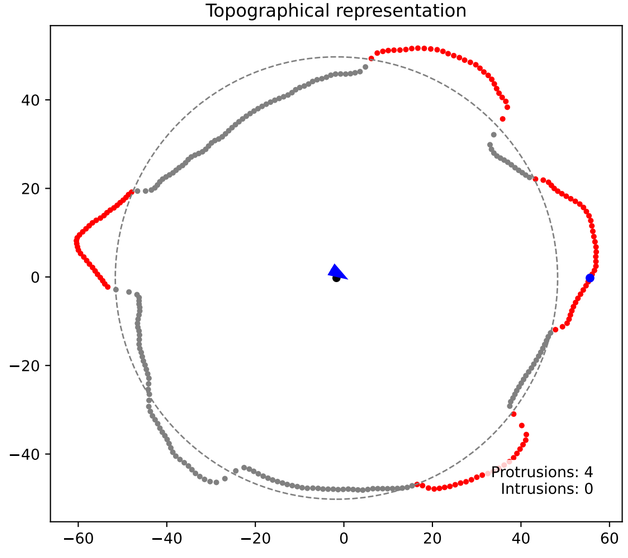

Shape evolution (t = 104.00)
Riemann Velocity: 0.2228
Max curvature: 0.0313
740
720
700
680
660
640
620
560
580
600
620

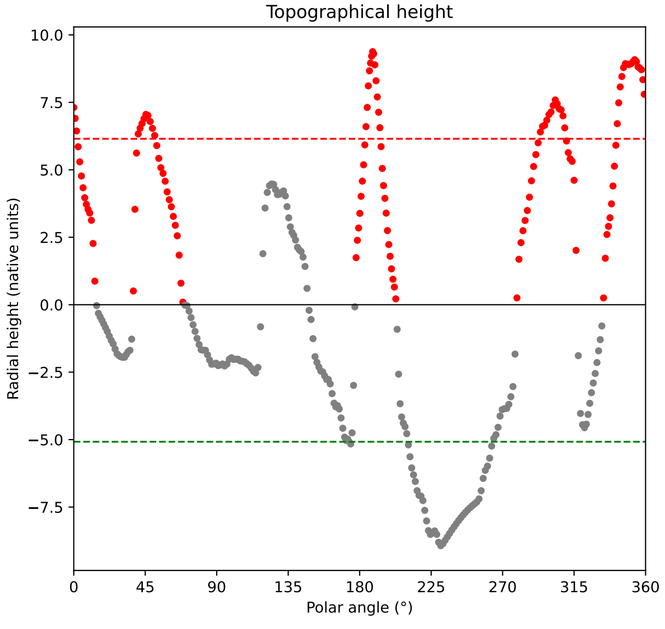

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

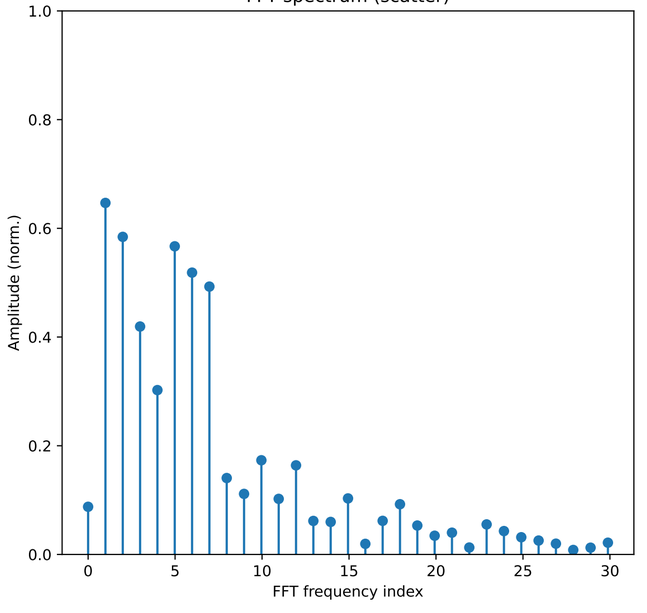

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

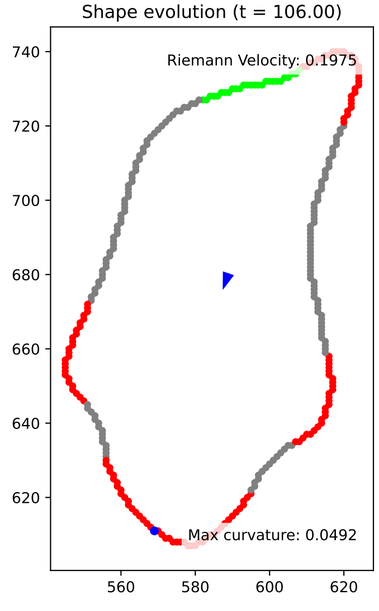

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

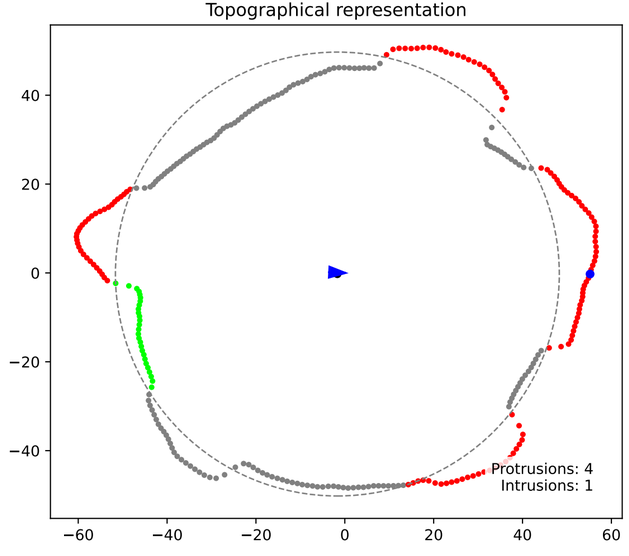

Shape evolution (t = 105.00)
Riemann Velocity: 0.2131
Max curvature: 0.0434
740
720
700
680
660
640
620
560
580
600
620

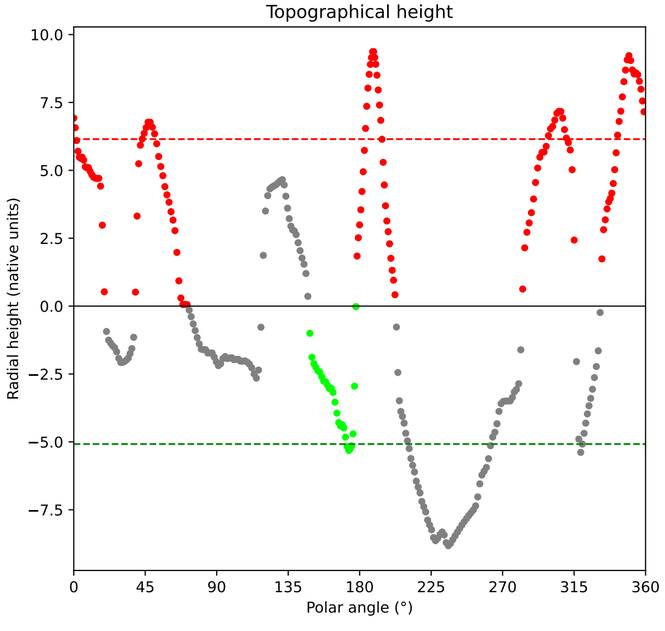

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

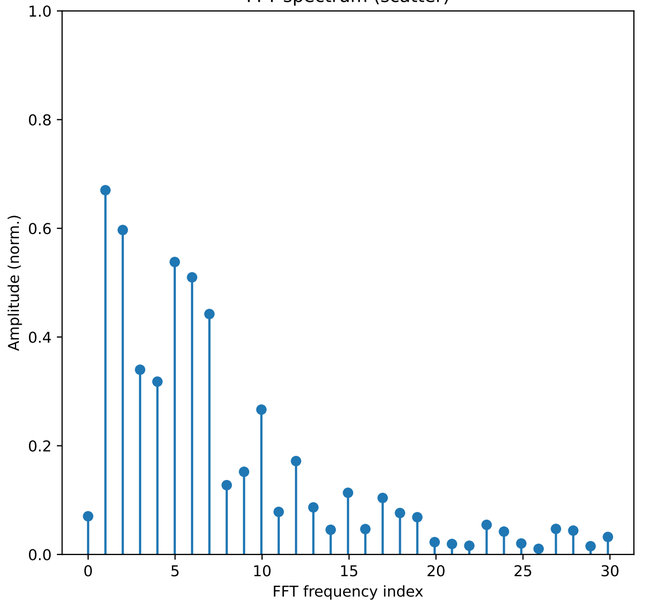

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

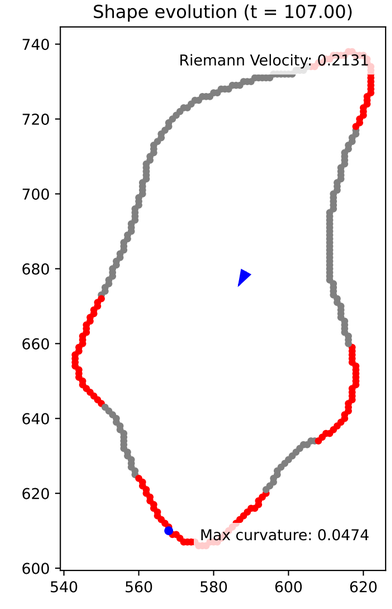

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

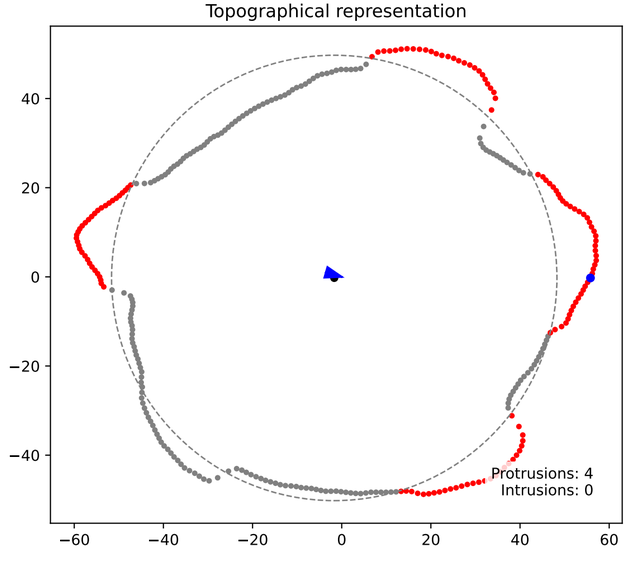

Shape evolution (t = 106.00)
Riemann Velocity: 0.1975
Max curvature: 0.0492
740
720
700
680
660
640
620
560
580
600
620

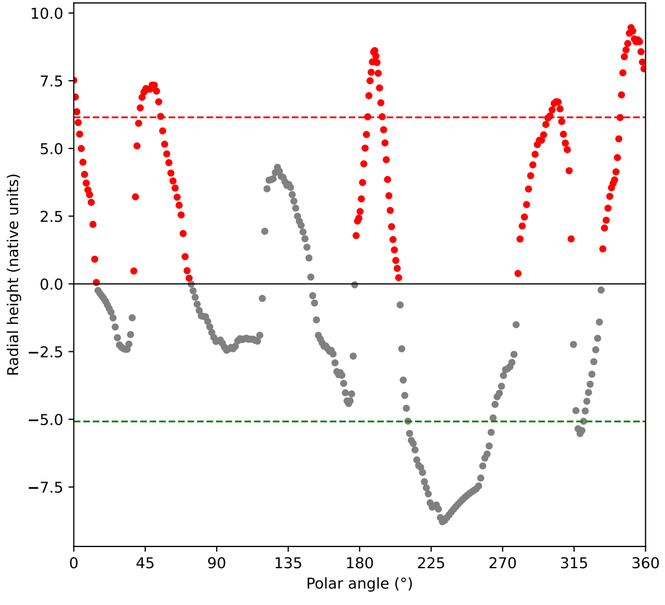

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

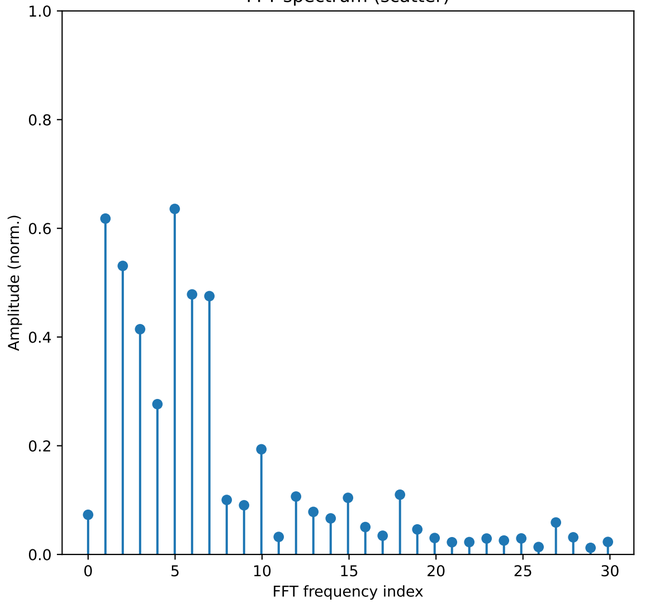

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

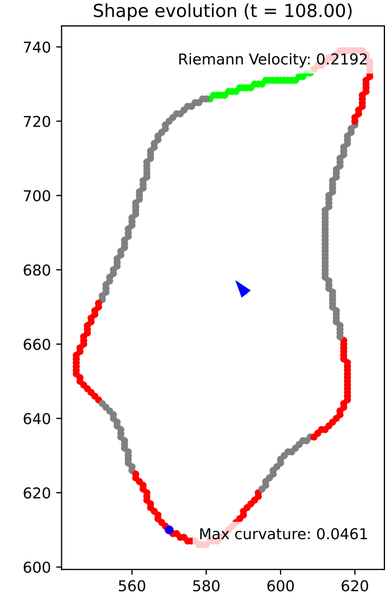

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

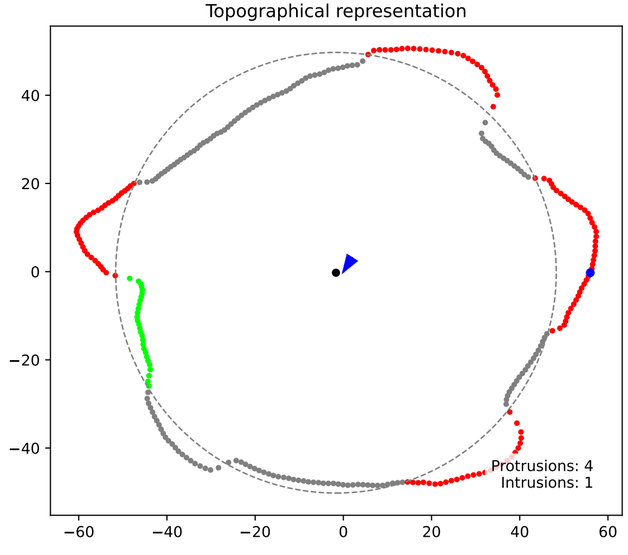

Shape evolution (t = 107.00)
Riemann Velocity: 0.2131
Max curvature: 0.0474
740
720
700
680
660
640
620
600
540
560
580
600
620

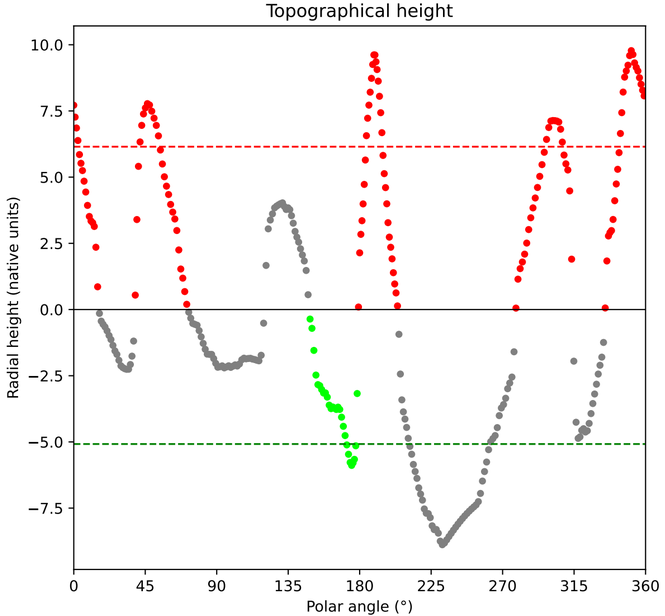

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

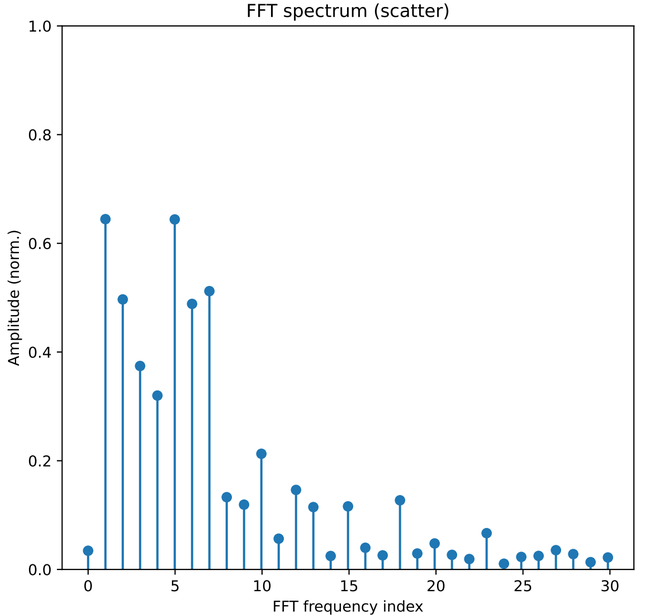

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

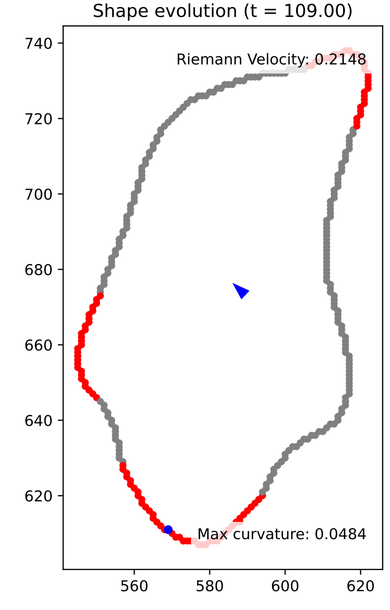

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

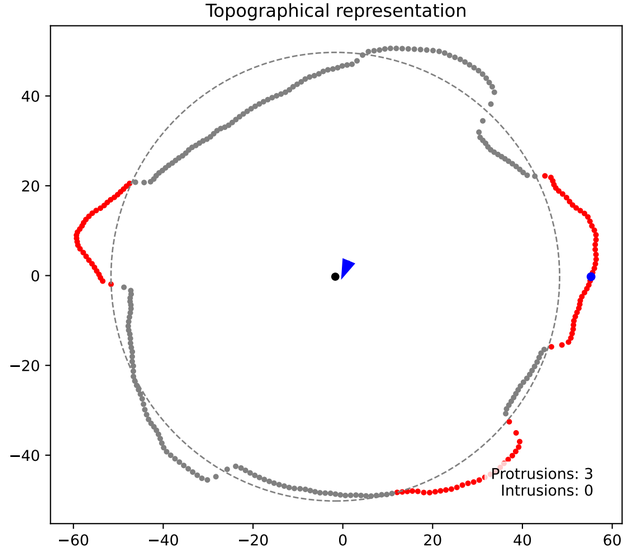

Shape evolution (t = 108.00)
Riemann Velocity: 0.2192
Max curvature: 0.0461

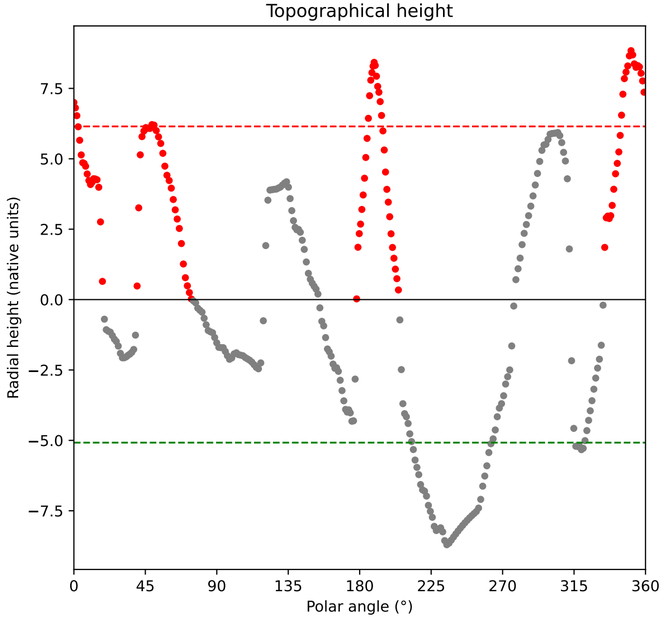

Topographical representation
Protrusions: 4
Intrusions: 1

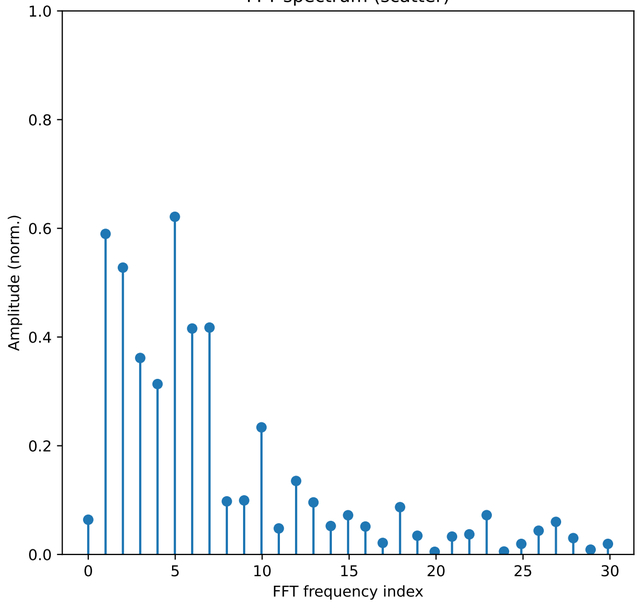

Topographical height
Radial height (native units)
Polar angle (°)

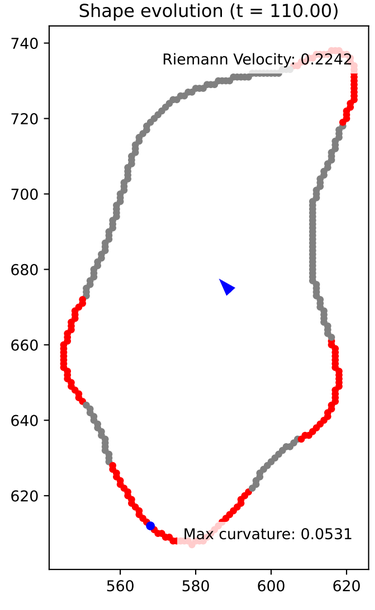

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index

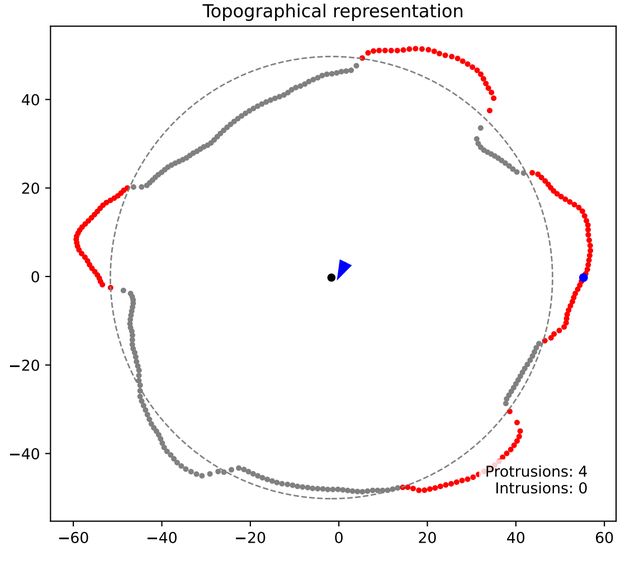

Shape evolution (t = 109.00)
Riemann Velocity: 0.2148
Max curvature: 0.0484
740
720
700
680
660
640
620
560
580
600
620

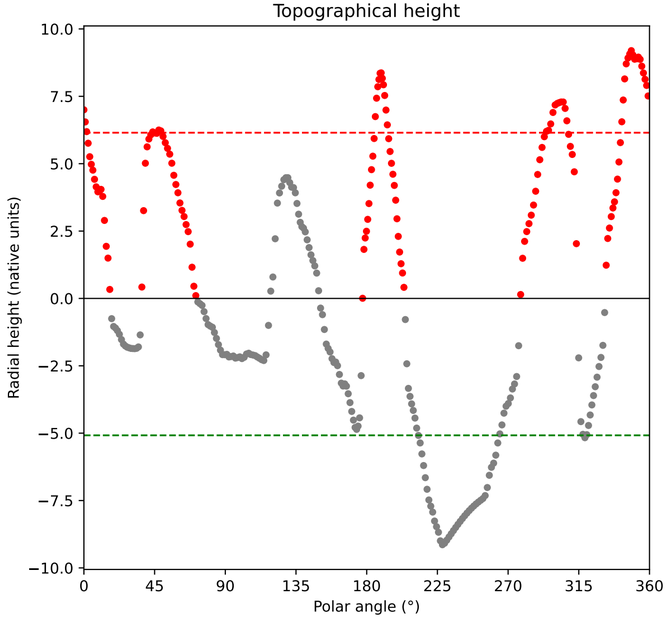

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

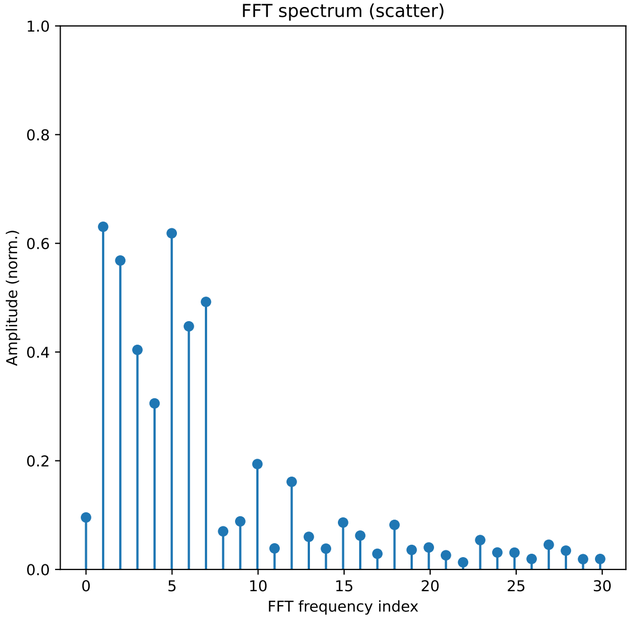

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

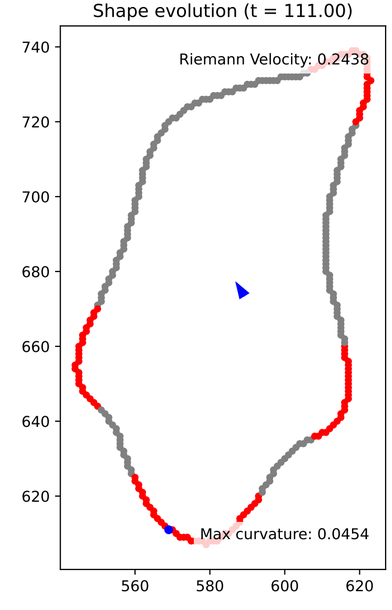

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

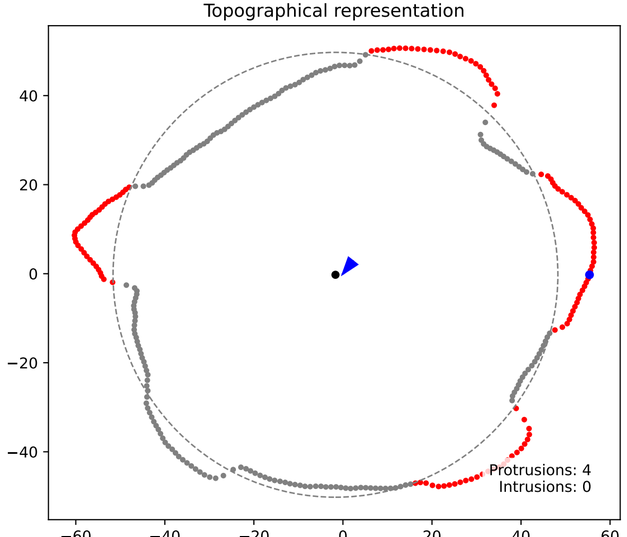

Shape evolution (t = 110.00)
Riemann Velocity: 0.2242
Max curvature: 0.0531
740
720
700
680
660
640
620
560
580
600
620

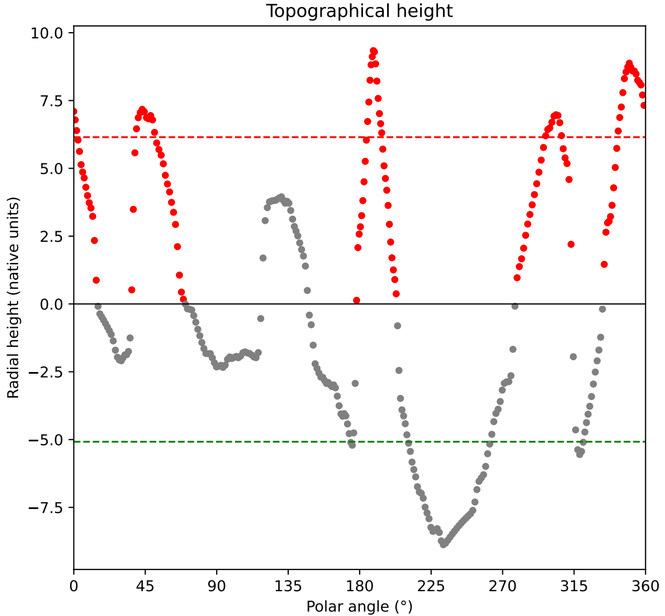

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

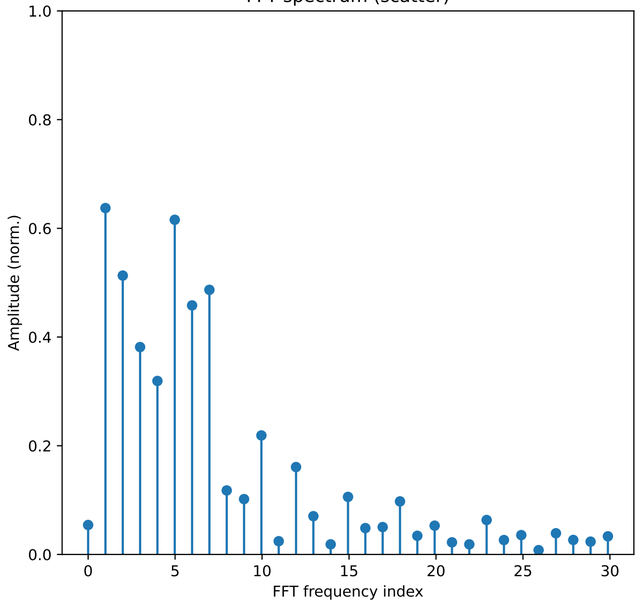

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
0
45
90
135
180
225
270
315
360

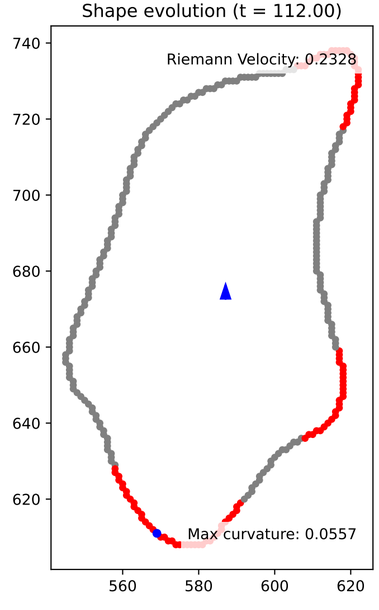

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

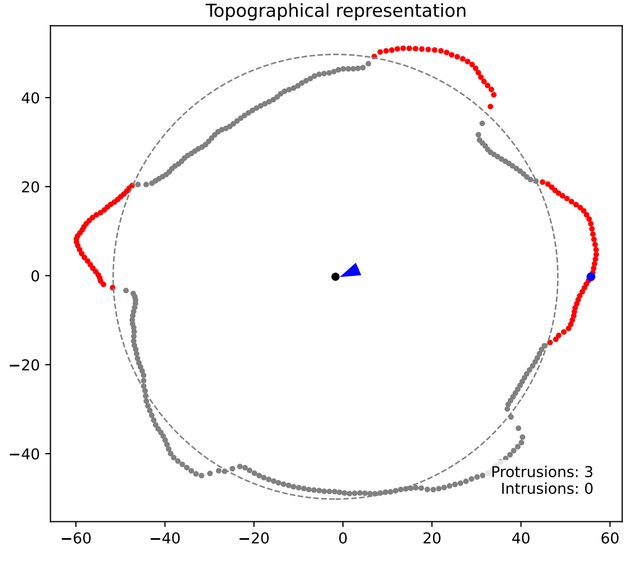

Shape evolution (t = 111.00)
Riemann Velocity: 0.2438
Max curvature: 0.0454
740
720
700
680
660
640
620
560
580
600
620

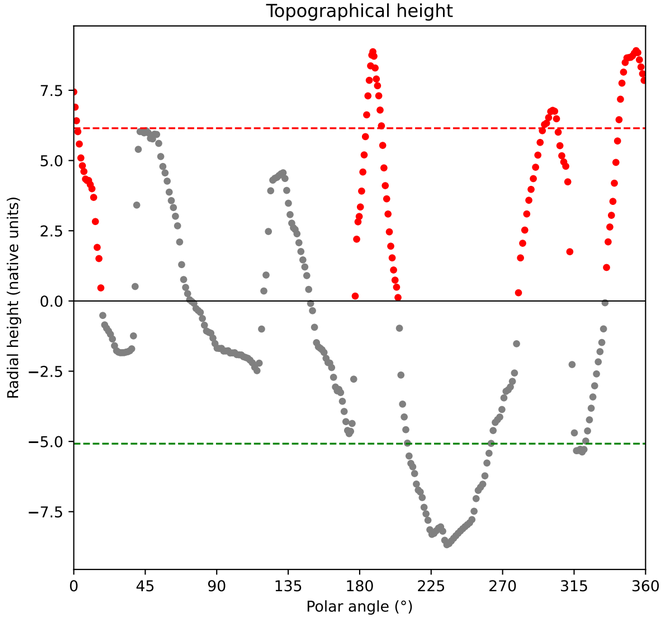

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

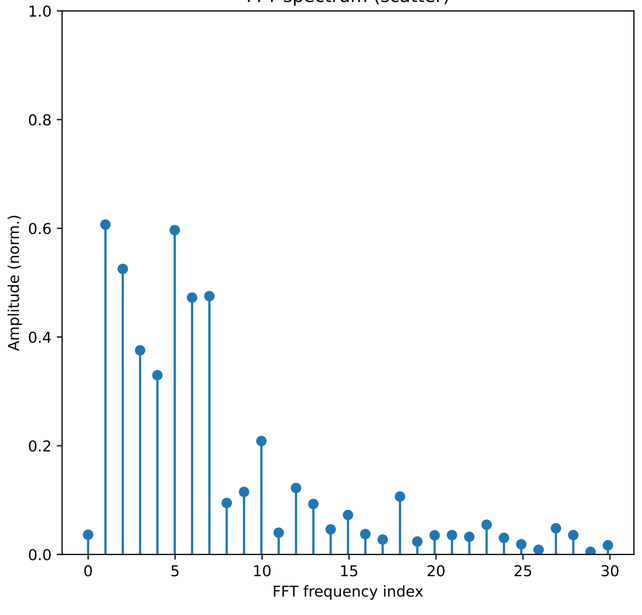

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

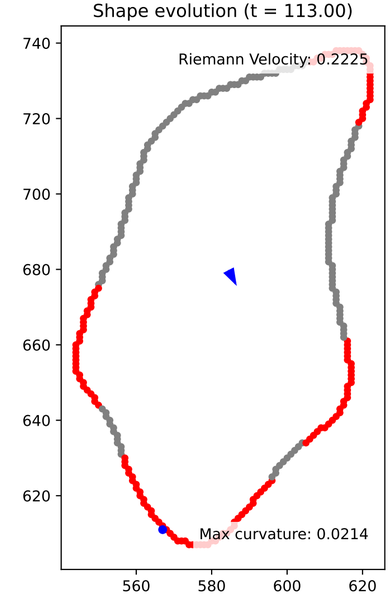

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

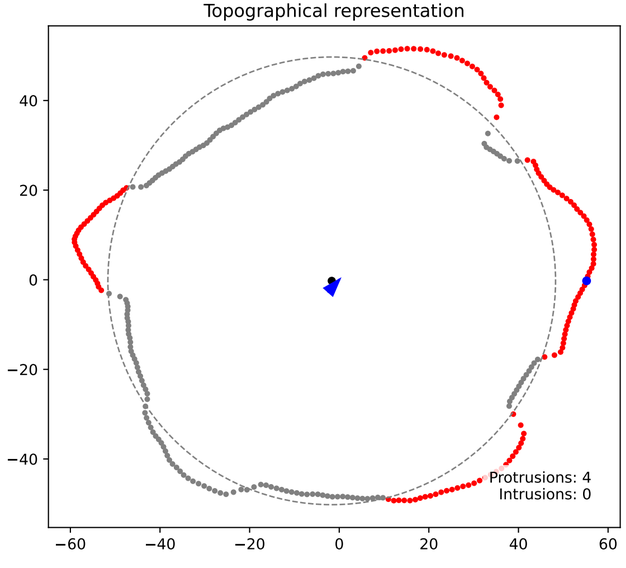

Shape evolution (t = 112.00)
Riemann Velocity: 0.2328
Max curvature: 0.0557
740
720
700
680
660
640
620
560
580
600
620

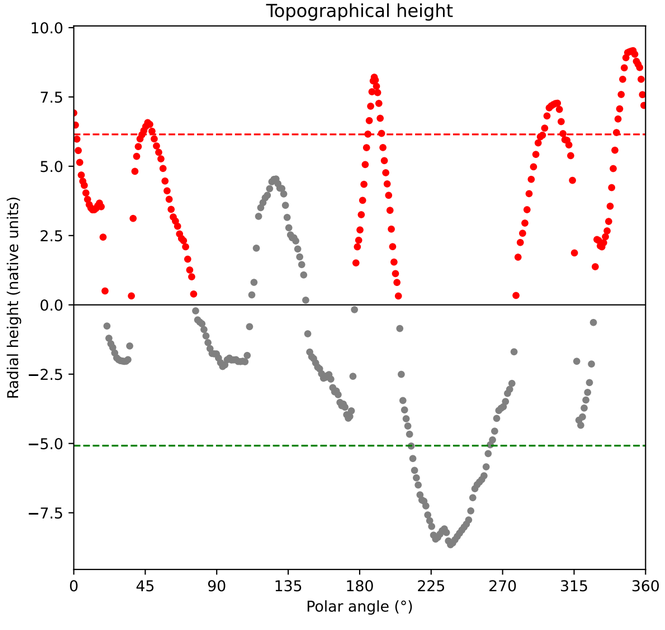

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

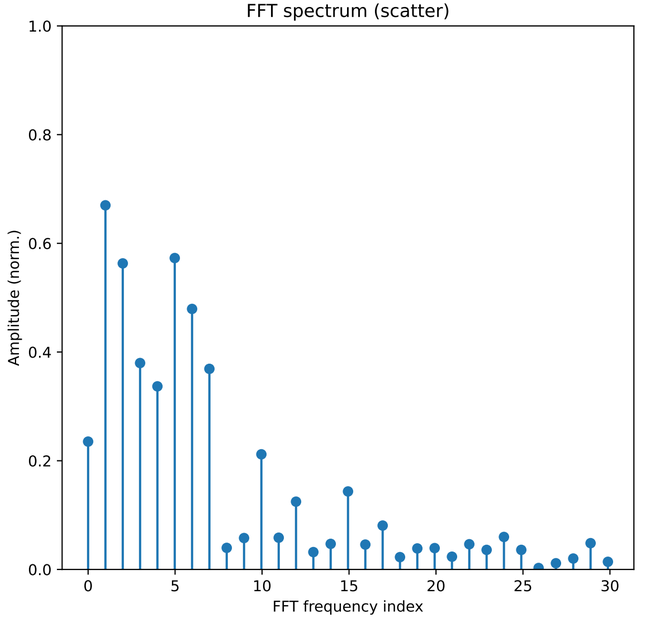

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

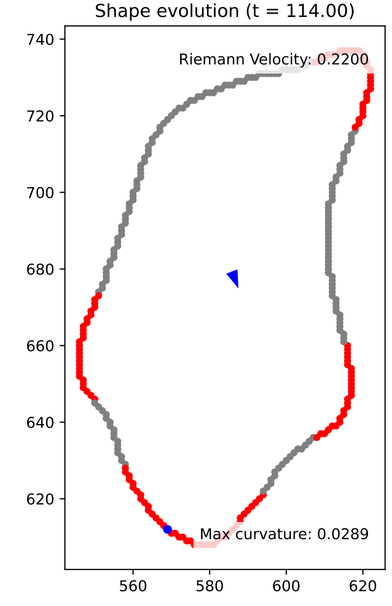

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

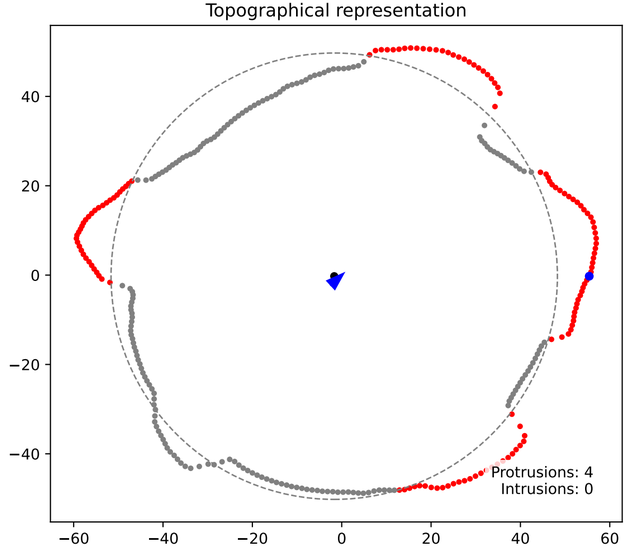

Shape evolution (t = 113.00)
Riemann Velocity: 0.2225
Max curvature: 0.0214
740
720
700
680
660
640
620
560
580
600
620

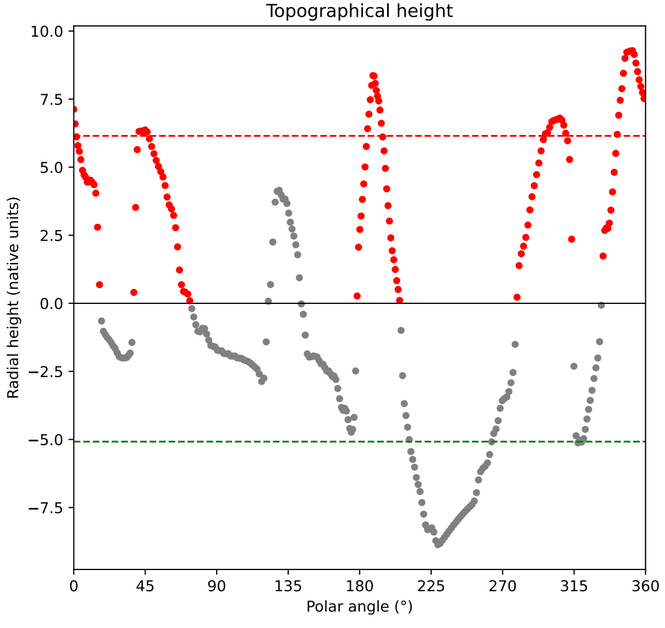

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

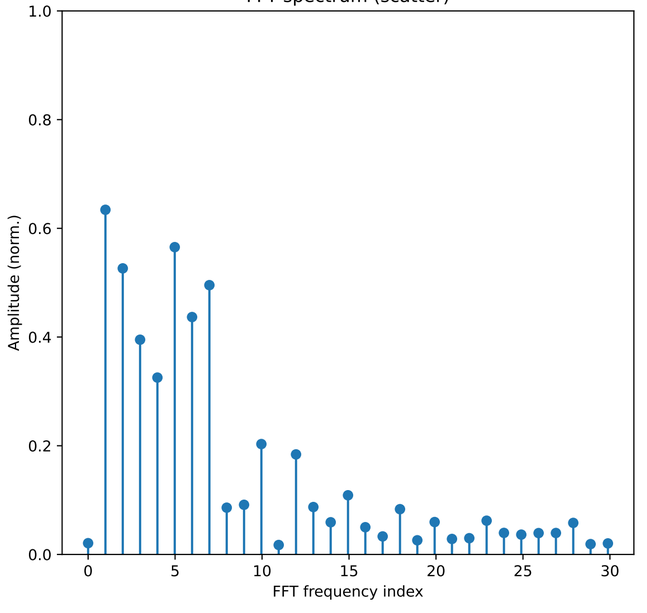

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

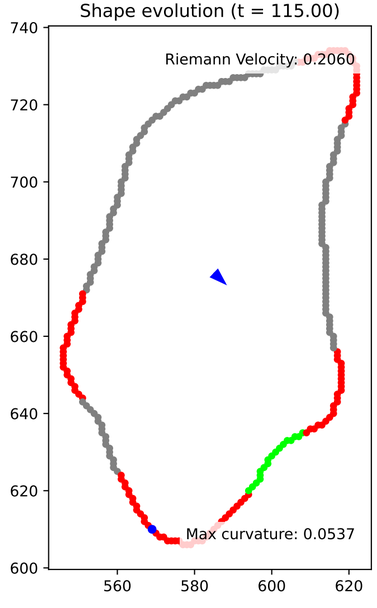

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

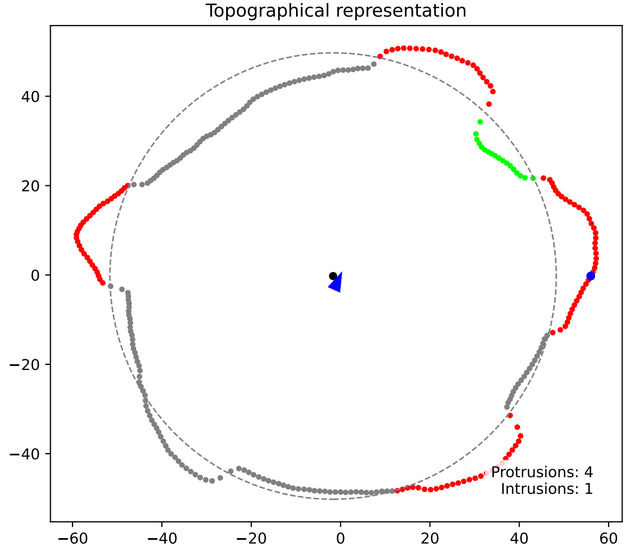

Shape evolution (t = 114.00)
Riemann Velocity: 0.2200
Max curvature: 0.0289
740
720
700
680
660
640
620
560
580
600
620

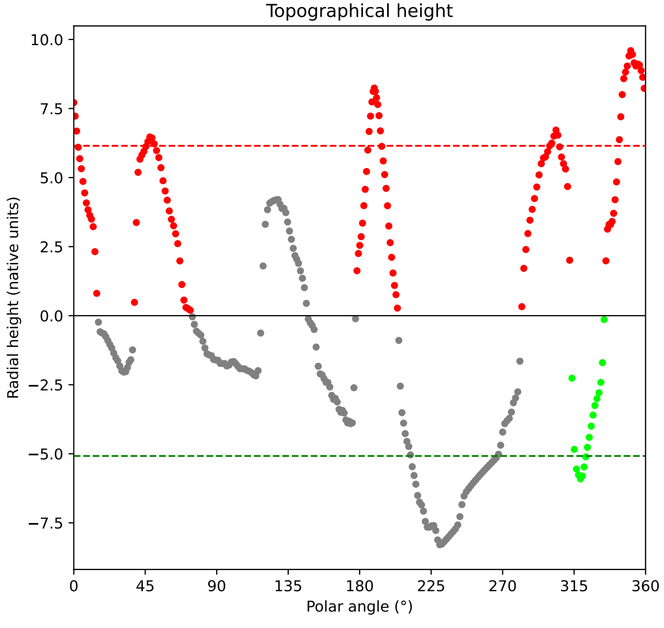

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

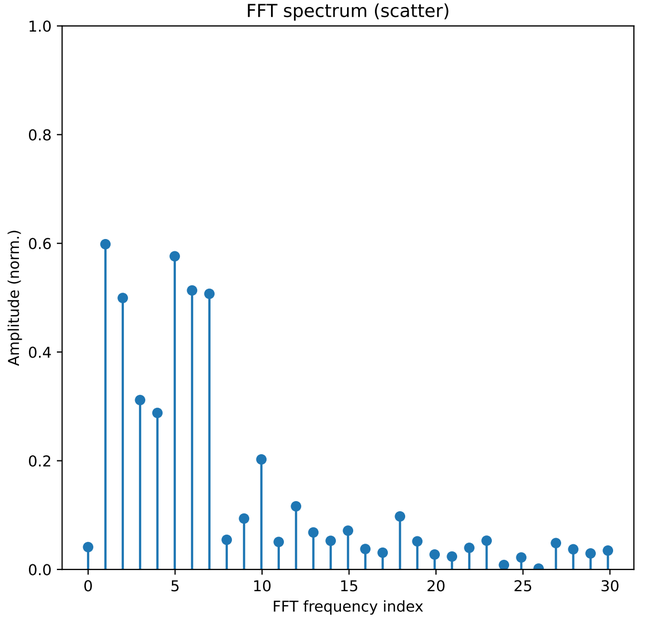

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

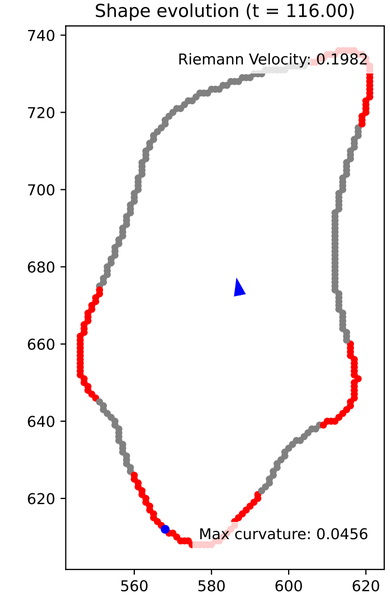

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

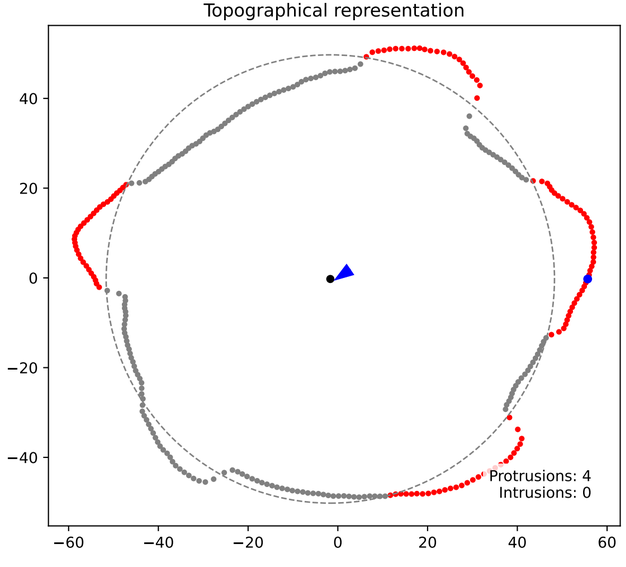

Shape evolution (t = 115.00)
Riemann Velocity: 0.2060
Max curvature: 0.0537
740
720
700
680
660
640
620
600
560
580
600
620

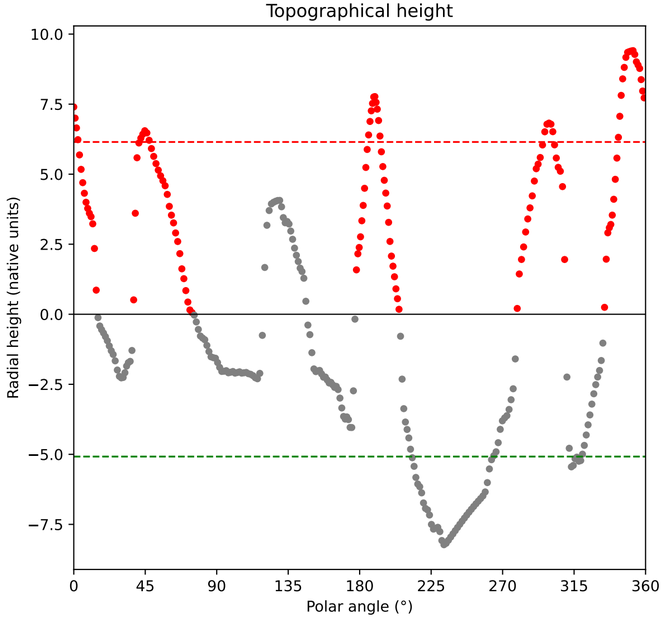

Topographical representation
Protrusions: 4
Intrusions: 1
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

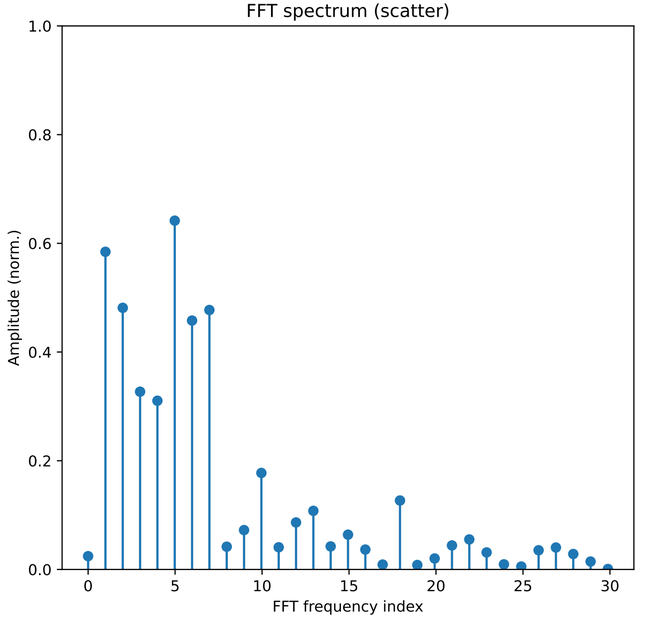

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

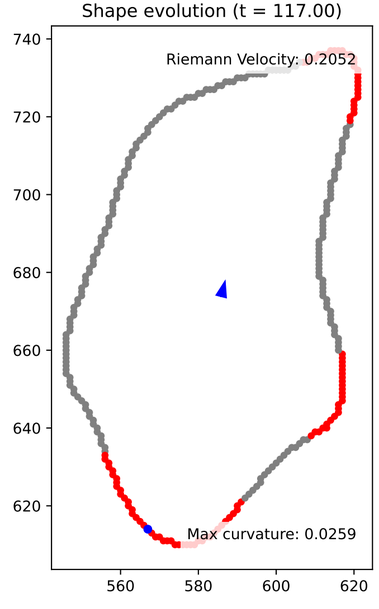

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

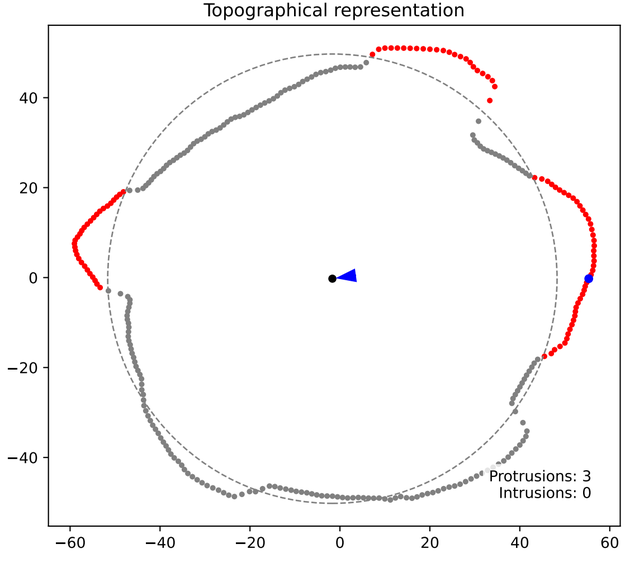

Shape evolution (t = 116.00)
Riemann Velocity: 0.1982
Max curvature: 0.0456
740
720
700
680
660
640
620
560
580
600
620

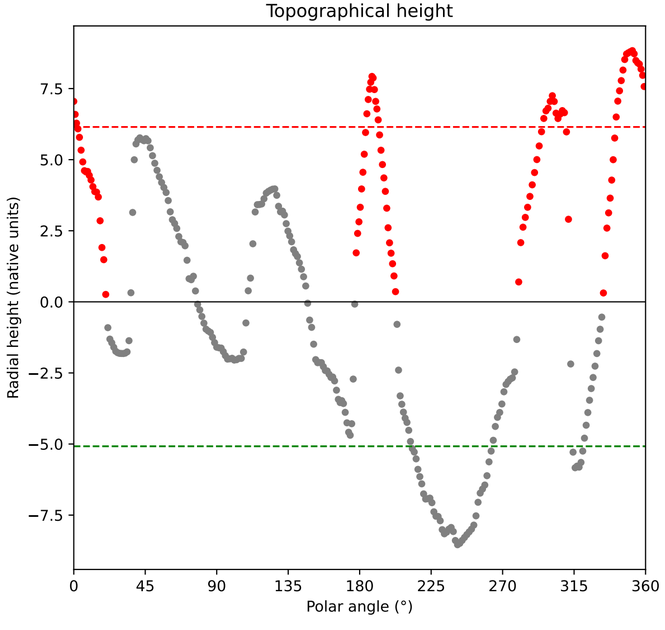

Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

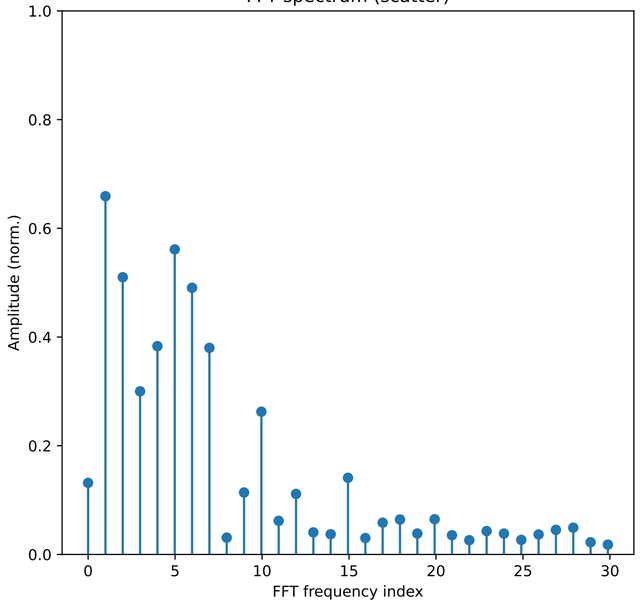

Topographical height
Radial height (native units)
Polar angle (°)
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360

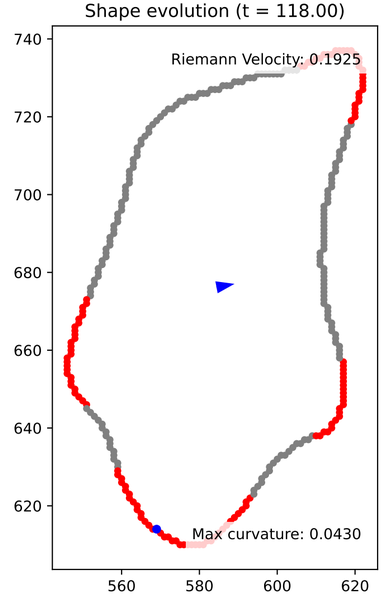

FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30

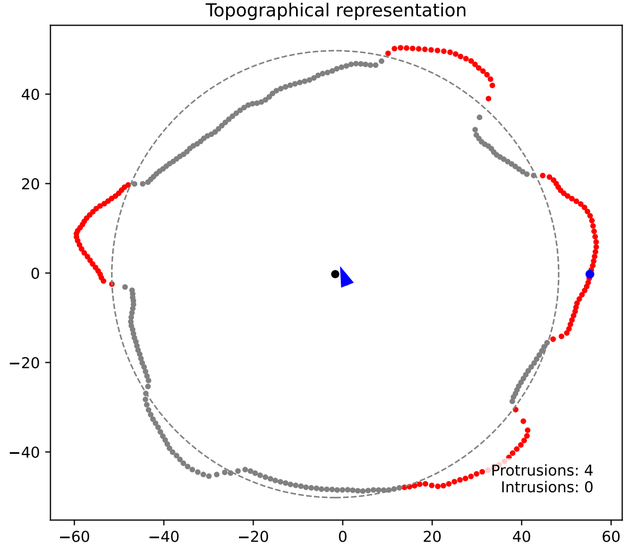

Shape evolution (t = 117.00)
Riemann Velocity: 0.2052
Max curvature: 0.0259
740
720
700
680
660
640
620
560
580
600
620

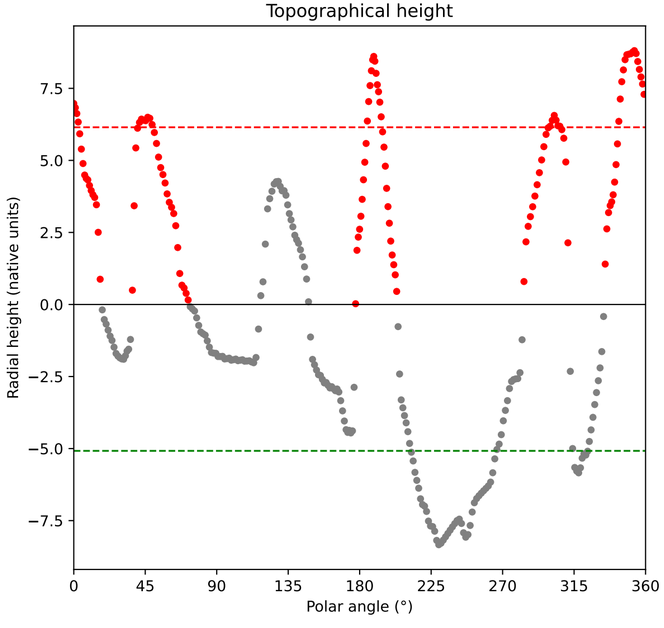

Topographical representation
Protrusions: 3
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60

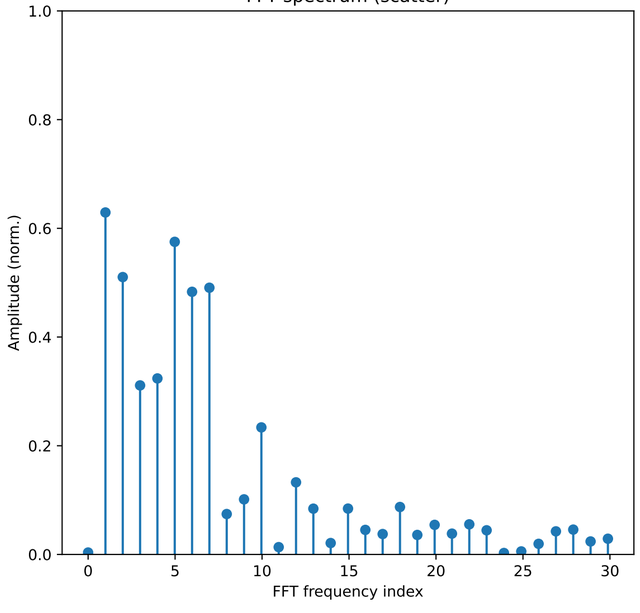

Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360


FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30


Shape evolution (t = 118.00)
Riemann Velocity: 0.1925
Max curvature: 0.0430
740
720
700
680
660
640
620
560
580
600
620


Topographical representation
Protrusions: 4
Intrusions: 0
40
20
0
−20
−40
−60
−40
−20
0
20
40
60


Topographical height
Radial height (native units)
Polar angle (°)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
0
45
90
135
180
225
270
315
360


FFT spectrum (scatter)
Amplitude (norm.)
FFT frequency index
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30