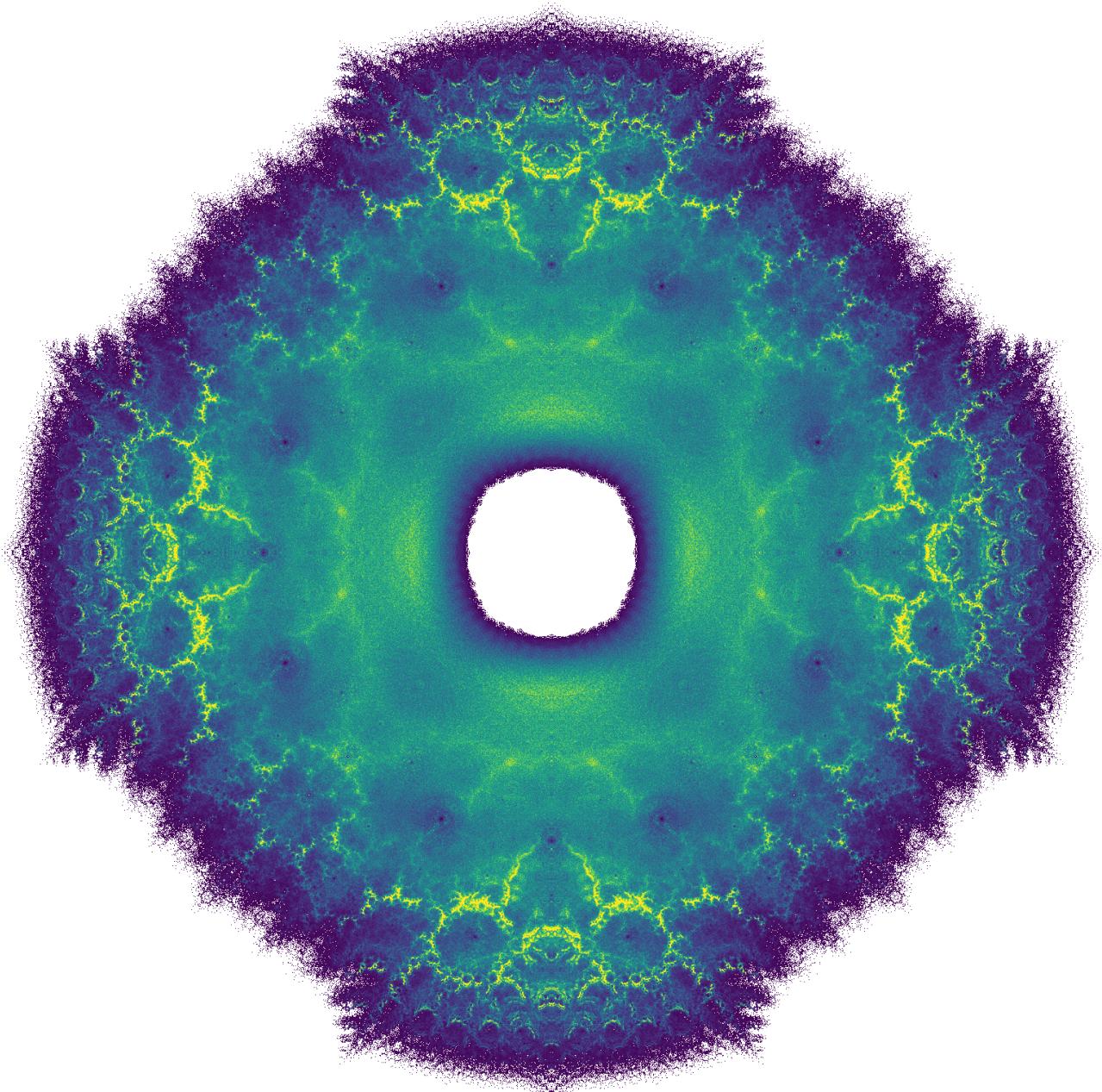


Bohemian Matrices
2021 Calendar



Skew-symmetric tridiagonal,

$m = 10, P = (1, \alpha, \alpha^3, \bar{\alpha}, \bar{\alpha}^3, i)$ where $\alpha = \exp(\pi i/8)$.

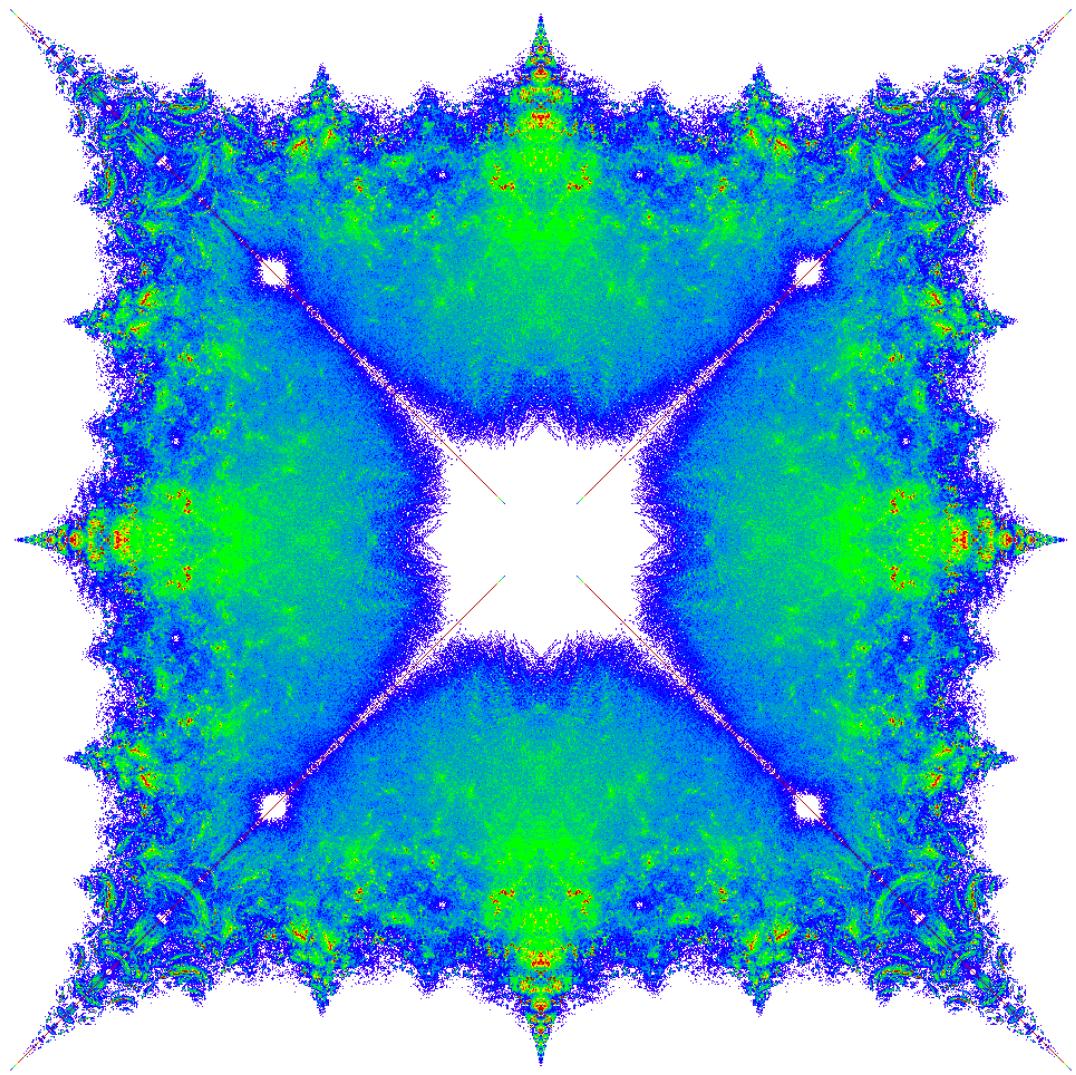
Image ©(2020) Robert M. Corless and Steven E. Thornton

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

December						
S	M	T	W	T	F	S
					1	2
					3	4
					5	6
					7	8
					9	10
					11	12
					13	14
					15	16
					17	18
					19	20
					21	22
					23	24
					25	26
					27	28
					29	30
					31	

February						
S	M	T	W	T	F	S
					1	2
					3	4
					5	6
					7	8
					9	10
					11	12
					13	14
					15	16
					17	18
					19	20
					21	22
					23	24
					25	26
					27	28

January 2021



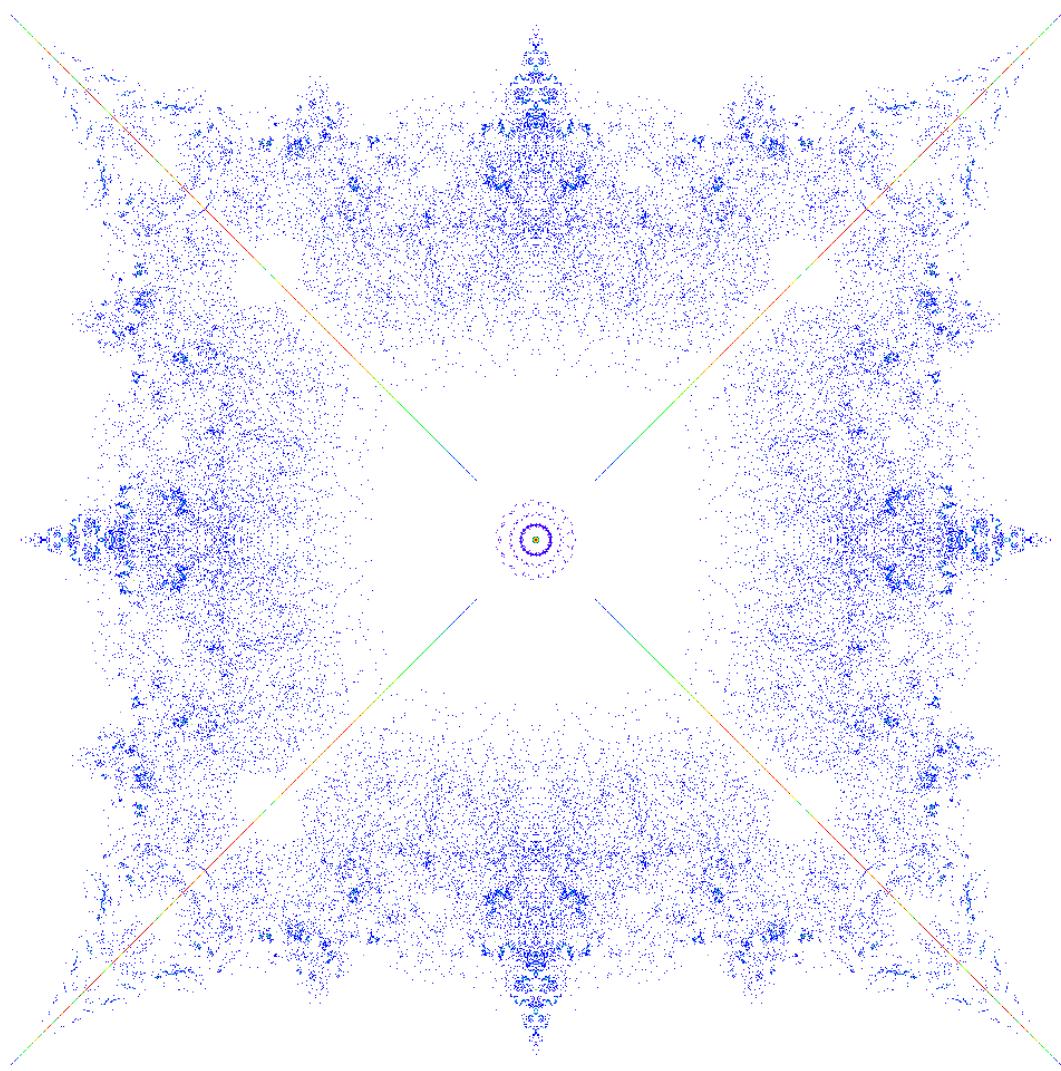
Skew-symmetric tridiagonal,
 $m = 22, P = 1 \pm i$.
 Image ©(2020) Robert M. Corless

S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

January						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

March						
S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February 2021



Skew-symmetric tridiagonal with visible rounding errors

$m = 15, P = 1 \pm i$.

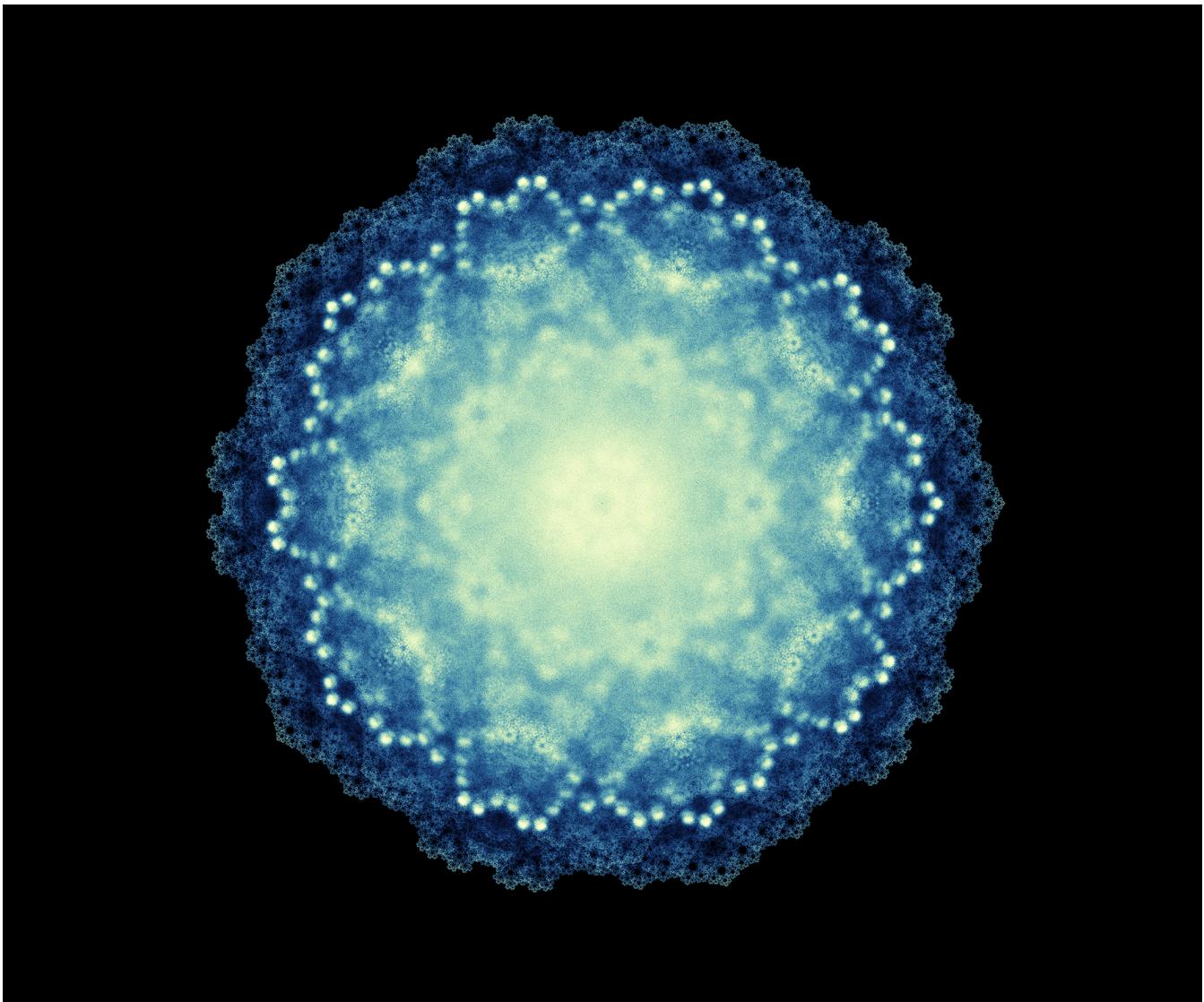
Image ©(2020) Robert M. Corless

S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February						
S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

April						
S	M	T	W	T	F	S
1	2	3				
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

March 2021



Upper Hessenberg Toeplitz matrices with diagonal entries fixed at 0, subdiagonal entries fixed at 1, and the population is all complex fifth roots of unity. Dimension $m = 13$, sample of 10 million matrices.

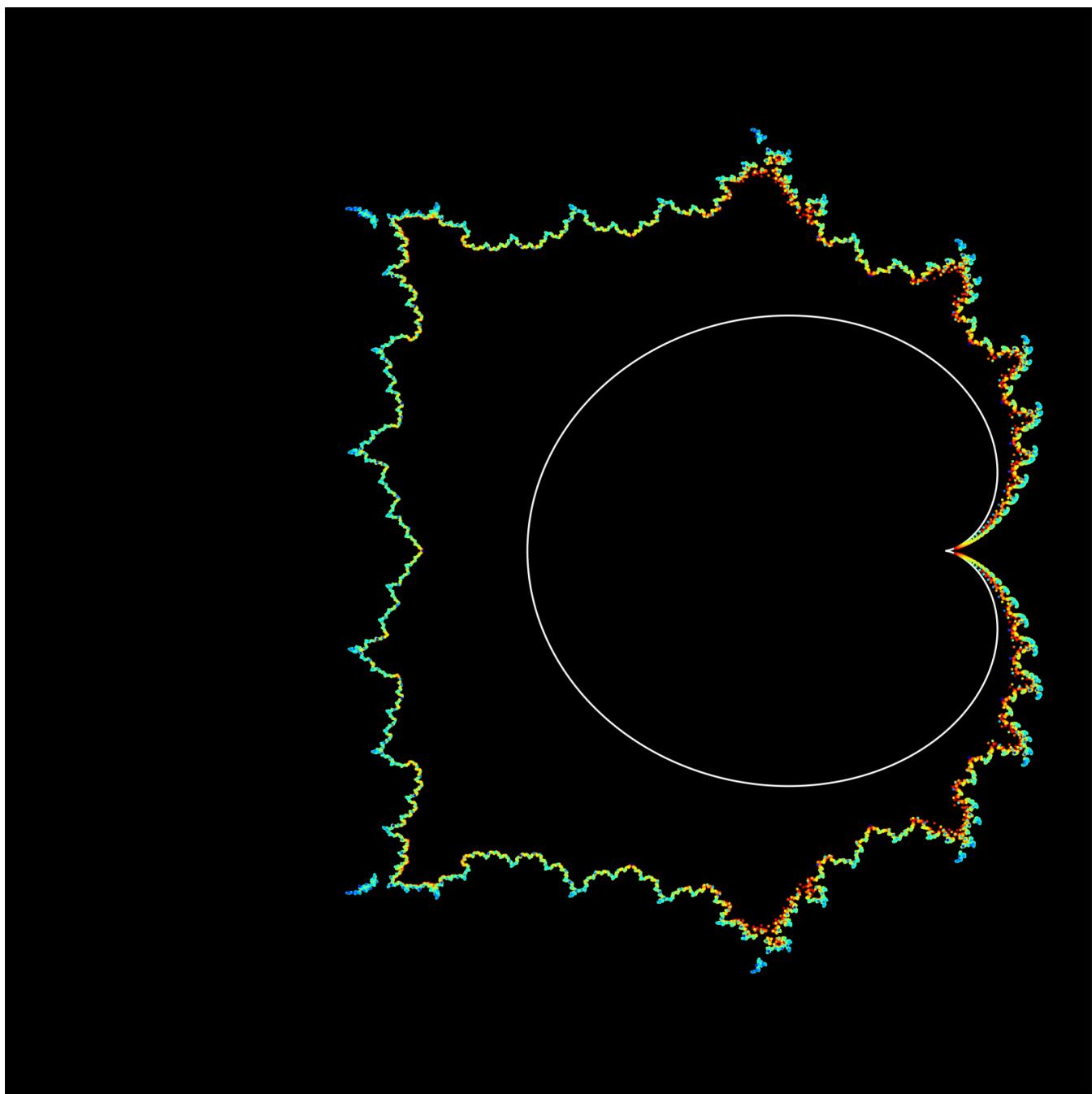
Image ©(2020) Robert M. Corless and Steven E. Thornton

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

March						
S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

May						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April 2021



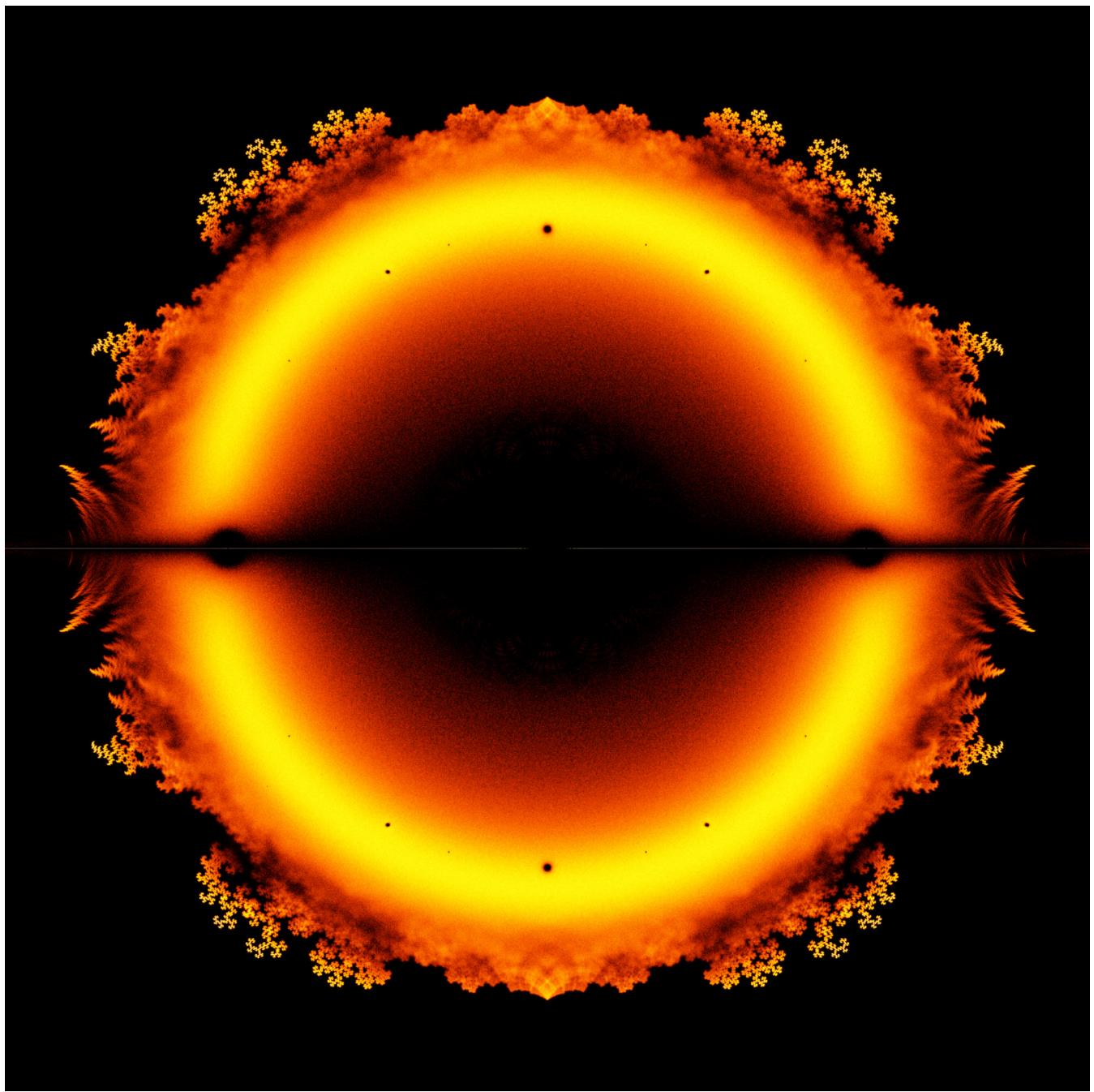
Complex roots of the Fibonacci-Mandelbrot polynomials defined by $q_0 = 0$, $q_1 = 1$, $q_{n+1} = zq_n q_{n-1} + 1$ for n from 4 through 30.
Image ©(2015) Eunice Y. S. Chan and Robert M. Corless

S	M	T	W	T	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April						
S	M	T	W	T	F	S
						1
						2 3
						4 5 6 7 8 9 10
						11 12 13 14 15 16 17
						18 19 20 21 22 23 24
						25 26 27 28 29 30

June						
S	M	T	W	T	F	S
						1 2 3 4 5
						6 7 8 9 10 11 12
						13 14 15 16 17 18 19
						20 21 22 23 24 25 26
						27 28 29 30

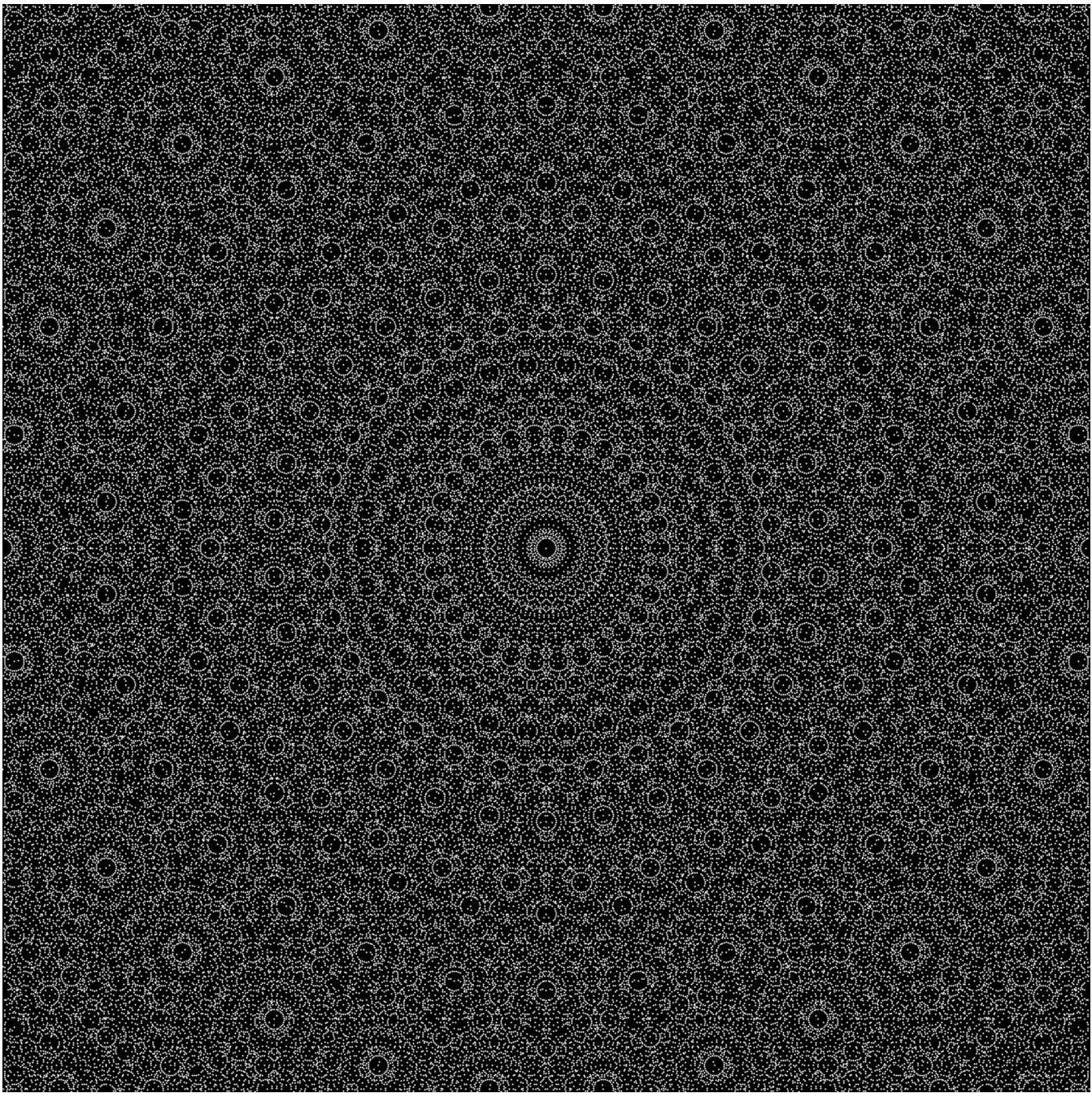
May 2021



Doubly companion matrices with population ± 1 . Dimension $m = 19$, sample of 10 million matrices.
Image ©(2018) Robert M. Corless and Steven E. Thornton

							May						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
							1	2	3	4	5	6	7
							8	9	10	11	12	13	14
							15	16	17	18	19	20	21
							22	23	24	25	26	27	28
							29	30	31				
							July						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
6	7	8	9	10	11	12		1	2	3			
13	14	15	16	17	18	19		4	5	6	7	8	9
20	21	22	23	24	25	26		10	11	12	13	14	15
27	28	29	30					16	17	18	19	20	21
								22	23	24	25	26	27
								28	29	30	31		

June 2021



Circulant matrices with population $(-1, 0, 1)$. Dimension $m = 15$, sample of 5 million matrices.
Image ©(2015) Robert M. Corless and Jonathan Briño-Tarasoff

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

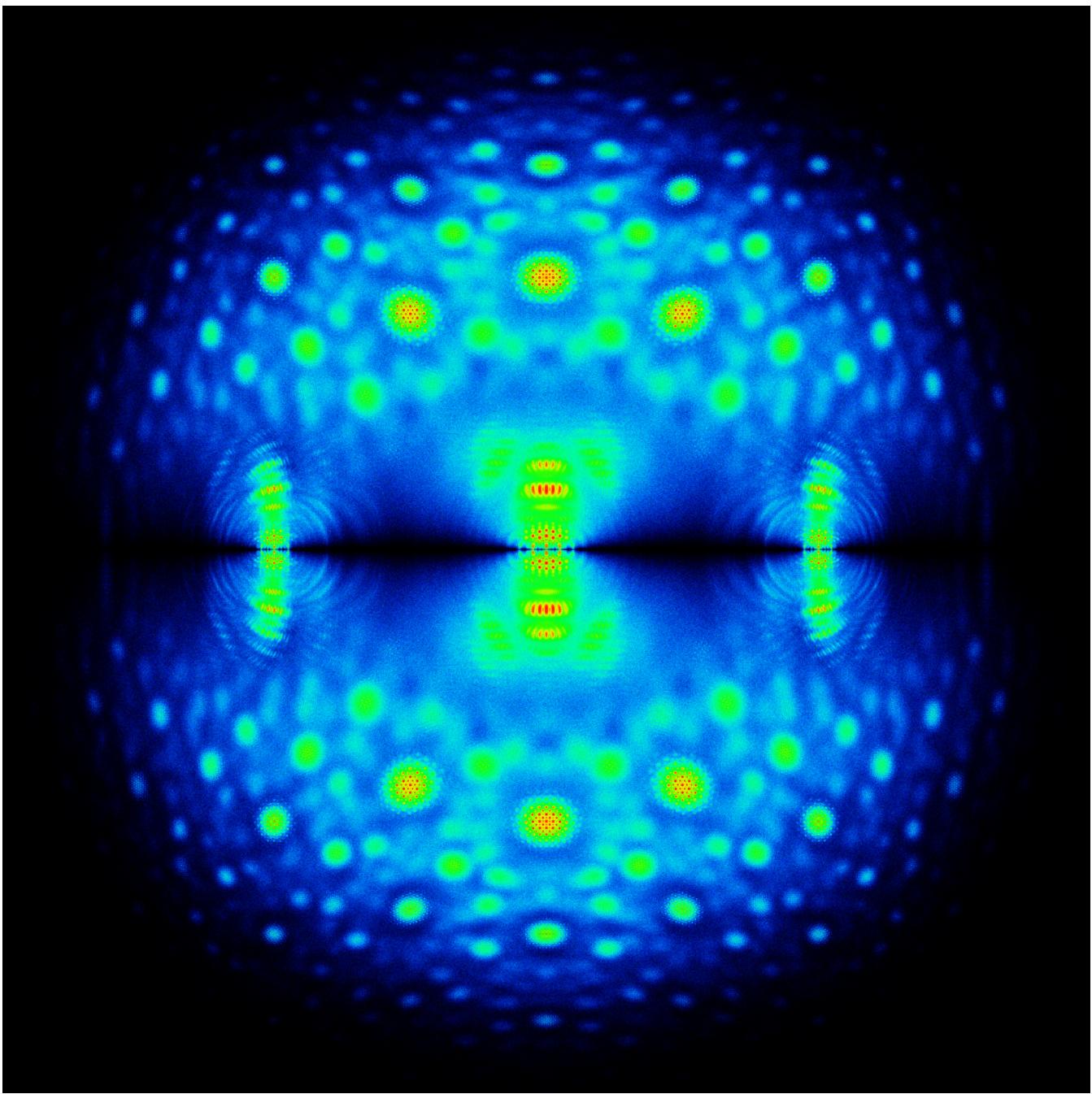
June

S	M	T	W	T	F	S
1	2	3	4	5		
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

August

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

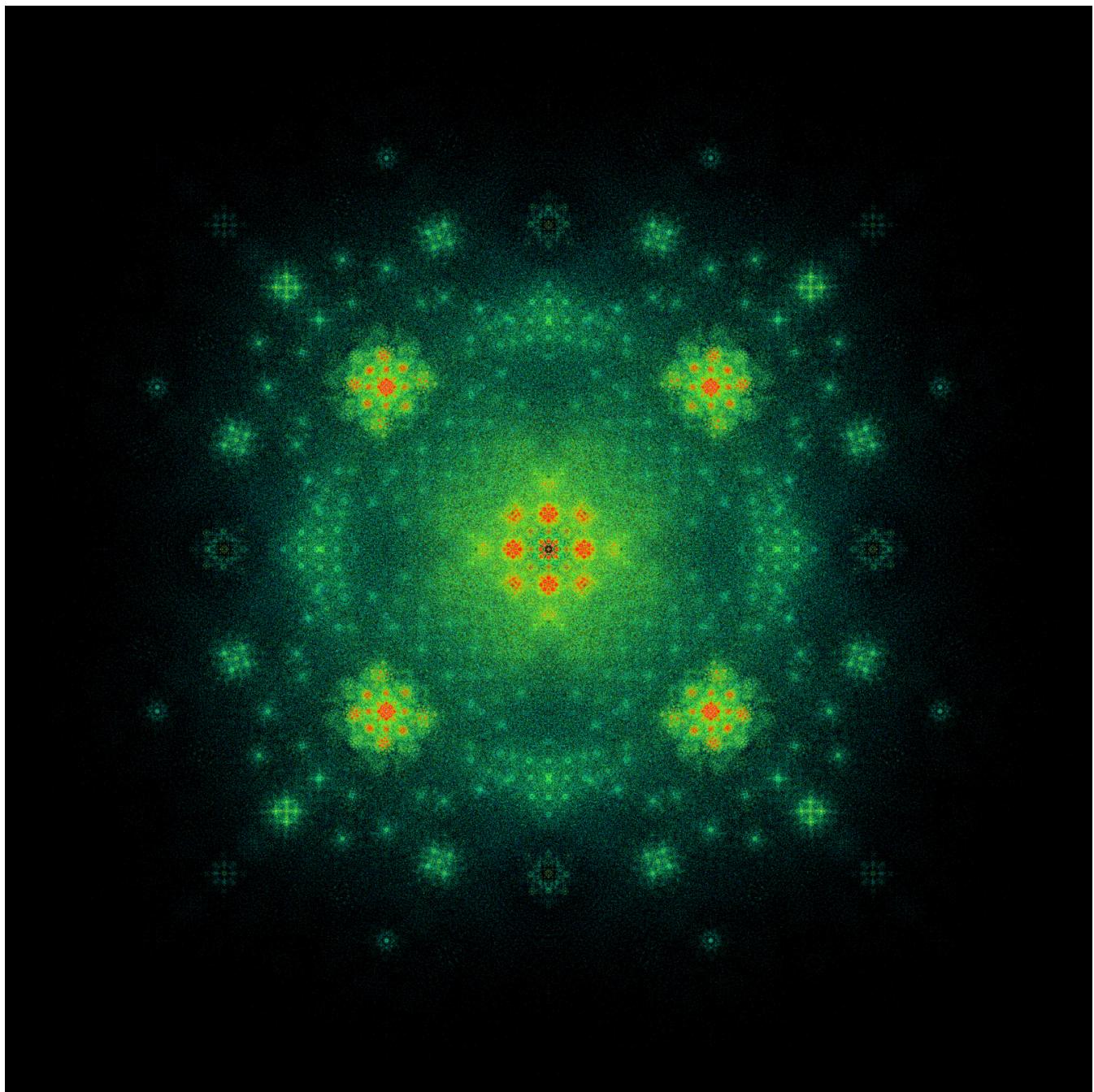
July 2021



Unstructured matrices with population $(-20, -1, 0, 1, 20)$. Dimension $m = 5$, sample of 73 million matrices.
Image ©(2017) Robert M. Corless and Steven E. Thornton

	S	M	T	W	T	F	S	
S	1	2	3	4	5	6	7	July
1	2	3	4	5	6	7		
2	3	4	5	6	7	8	9	10
3	4	5	6	7	8	9	10	11
4	5	6	7	8	9	10	11	12
5	6	7	8	9	10	11	12	13
6	7	8	9	10	11	12	13	14
7	8	9	10	11	12	13	14	15
8	9	10	11	12	13	14	15	16
9	10	11	12	13	14	15	16	17
10	11	12	13	14	15	16	17	18
11	12	13	14	15	16	17	18	19
12	13	14	15	16	17	18	19	20
13	14	15	16	17	18	19	20	21
14	15	16	17	18	19	20	21	22
15	16	17	18	19	20	21	22	23
16	17	18	19	20	21	22	23	24
17	18	19	20	21	22	23	24	25
18	19	20	21	22	23	24	25	26
19	20	21	22	23	24	25	26	27
20	21	22	23	24	25	26	27	28
21	22	23	24	25	26	27	28	29
22	23	24	25	26	27	28	29	30
23	24	25	26	27	28	29	30	31
24	25	26	27	28	29	30	31	
25	26	27	28	29	30	31		
26	27	28	29	30	31			
27	28	29	30	31				
28	29	30	31					
29	30	31						
30	31							
31								

August 2021



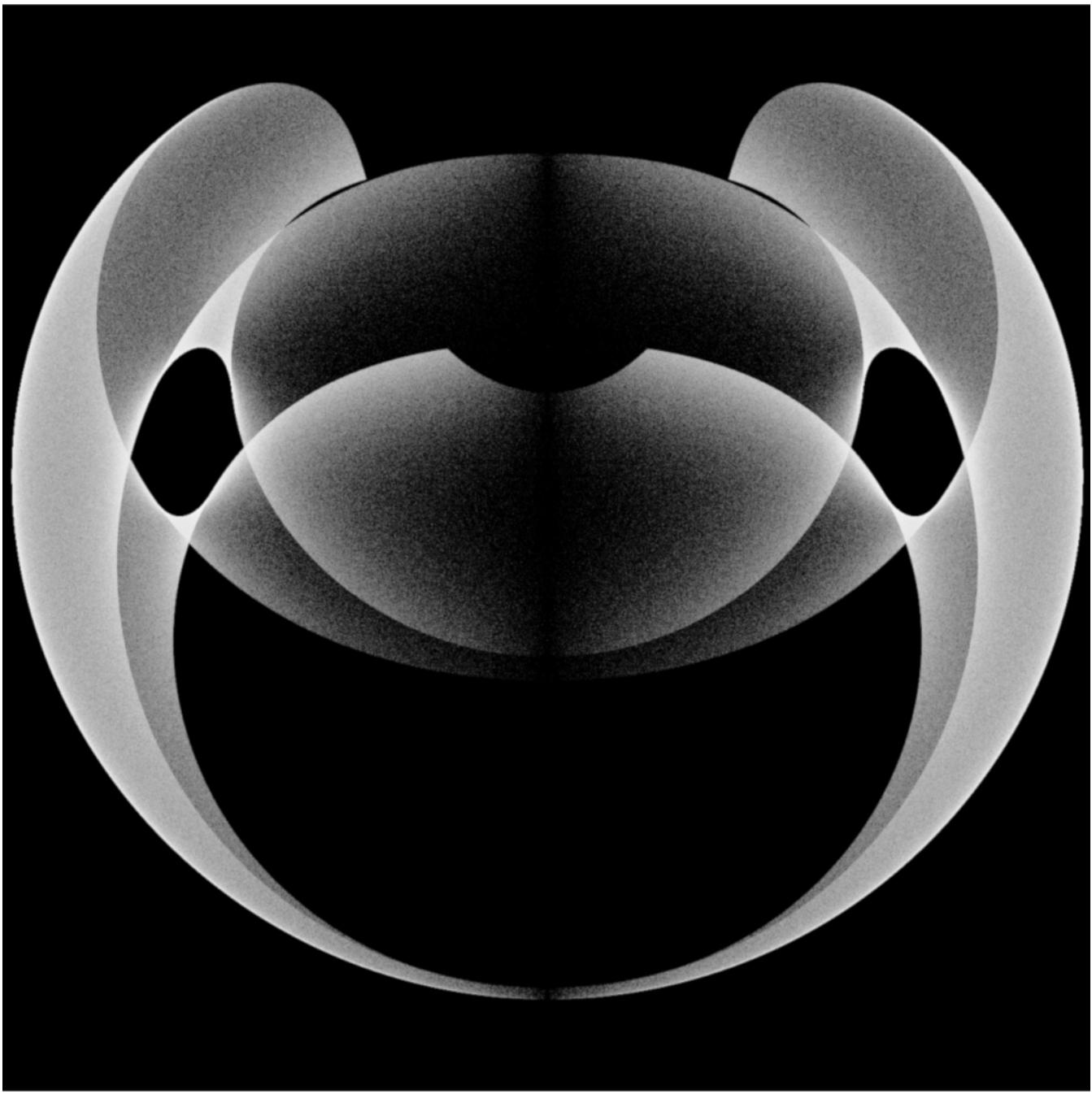
Checkerboard 6 from www.bohemianmatrices.com. Ten million 6 by 6 matrices sampled. Population has nine entries.
Image ©(2016) Steven E. Thornton

S	M	T	W	T	F	S
				1	2	3
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

August						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

October						
S	M	T	W	T	F	S
						1
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
						31

September 2021



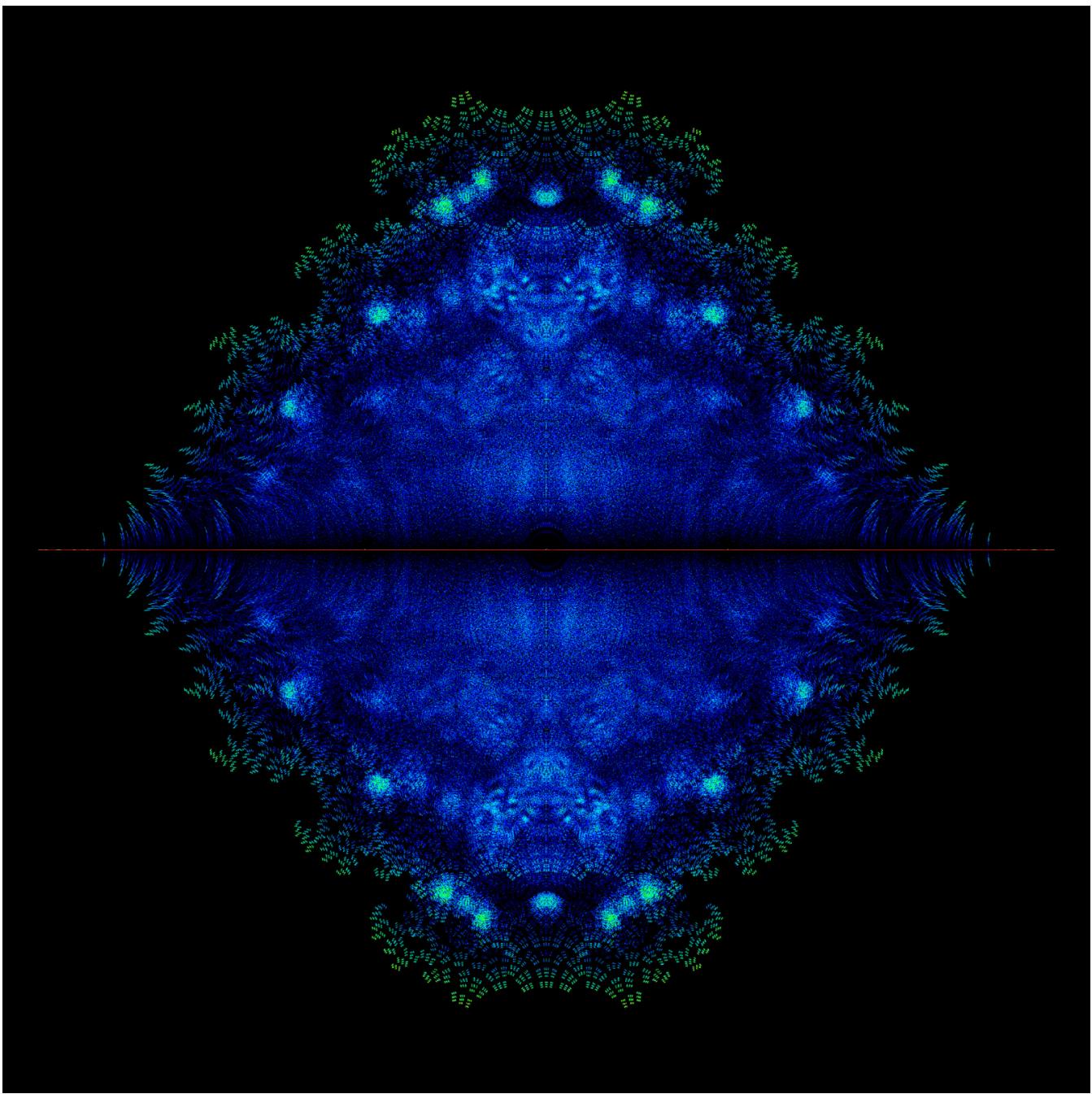
Eigenfish 3 from www.bohemianmatrices.com, rotated 90 degrees.
Image ©(2020) Robert M. Corless and Steven E. Thornton

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

September						
S	M	T	W	T	F	S
					1	2
					3	4
					5	6
					7	8
					9	10
					11	12
					13	14
					15	16
					17	18
					19	20
					21	22
					23	24
					25	26
					27	28
					29	30

November						
S	M	T	W	T	F	S
					1	2
					3	4
					5	6
					7	8
					9	10
					11	12
					13	14
					15	16
					17	18
					19	20
					21	22
					23	24
					25	26
					27	28
					29	30

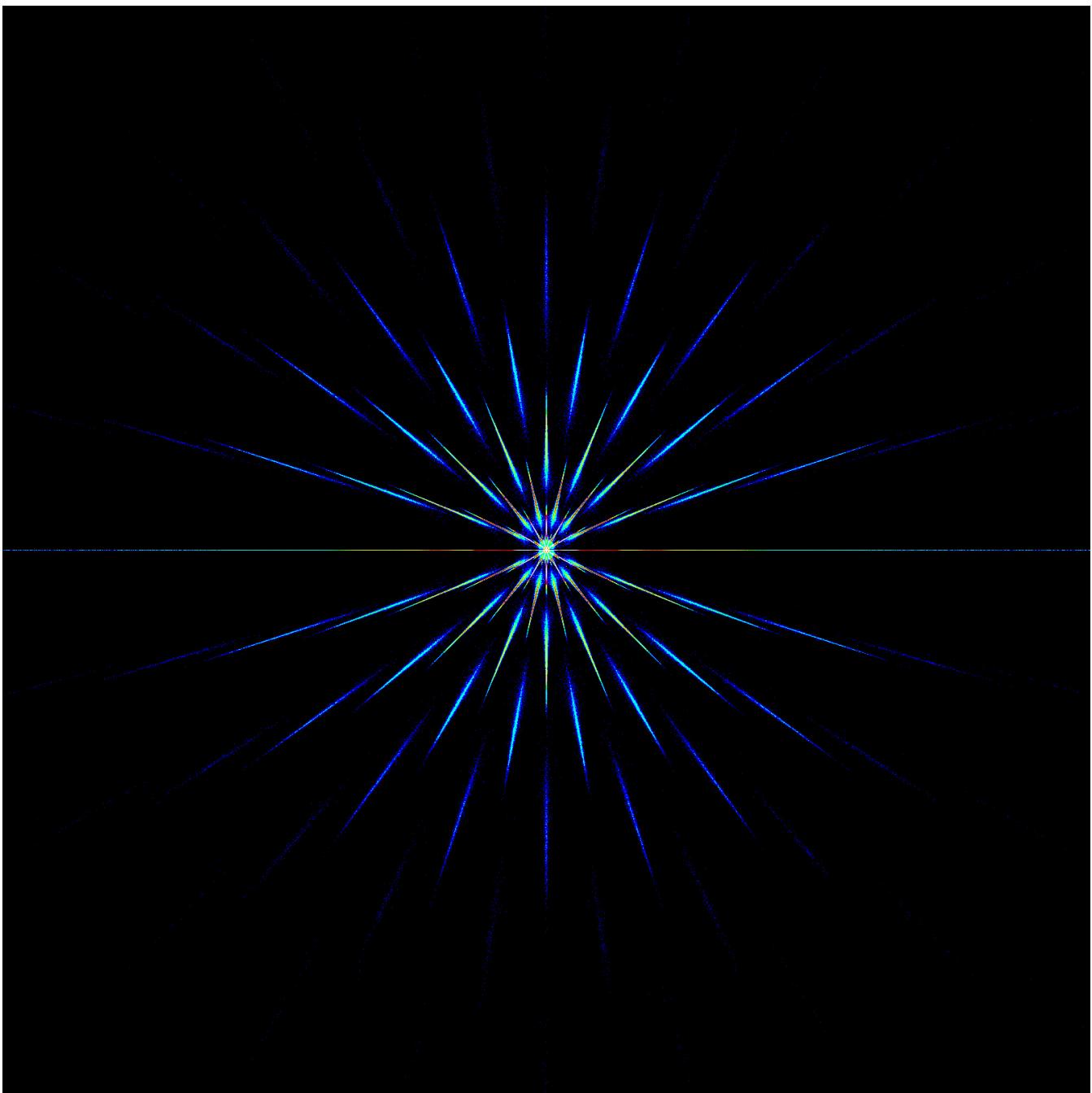
October 2021



Upper Hessenberg Toeplitz matrices with diagonal entries fixed at 0, subdiagonal entries fixed at 1, and $P = (-1, 0, 1)$. Dimension $m = 12$, sample of 100 million matrices. Image ©(2018) Eunice Y. S. Chan, Robert M. Corless and Steven E. Thornton

S	M	T	W	T	F	S	October						
1	2	3	4	5	6		S	M	T	W	T	F	S
7	8	9	10	11	12	13	31	1	2	3	4	5	6
14	15	16	17	18	19	20	10	11	12	13	14	15	16
21	22	23	24	25	26	27	17	18	19	20	21	22	23
28	29	30					24	25	26	27	28	29	30
December													
5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	

November 2021



Anti-tridiagonal with visible rounding errors in close-up (corners at ± 0.05). $m = 20$, $P = (-1, 0, 1)$, sample of 25 million matrices
Image ©(2017) Robert M. Corless and Steven E. Thornton

S	M	T	W	T	F	S	November							
				1	2	3	4	S	M	T	W	T	F	S
								1	2	3	4	5	6	
								7	8	9	10	11	12	13
								14	15	16	17	18	19	20
								21	22	23	24	25	26	27
								28	29	30				
5	6	7	8	9	10	11								
12	13	14	15	16	17	18								
19	20	21	22	23	24	25								
26	27	28	29	30	31									

December 2021