Report on failing values in MIXMAX cythonized python script

a) Two parameter A1(N, s) matrix (equals to A2(N, s, 1)):

N	s	m	Value of det(inv(A))	Value of det(A)	Entropy of inv A	Runtime	State of failure
8	10^16	1	-10610983019122 1.36	0.0	73.0	0.754s	Det negative number
16	10^16	1	0.900	0.0	43.44	0.544s	Det zero
32	10^16	1	2.705	0.0	85.16	0.545s	Det zero
64	10^16	1	0.675	0.0	71.49	0.544s	Det zero
256	10^16	1	0.90	0.0	190.30	0.712s	Det zero
128	10^16	1	0.45	0.0	109.33	0.576s	Det zero
1024	10^16	1	0.45	0.0	685.89	3.844s	Det zero
2048	10^16	1	0.22	0.0	1347.71	21.177s	Det zero
4096	10^16	1	0.45	0.0	2670.0	2m46s	Det zero
8192	1	1	0.999	0.999	5292.30	19m42s	Works
10,000	1	1	1.000	1.000	6460.50	27m30s	Works
11,000	1	1	1.000	1.000	7106.64	36m19s	Works
12,000	1	1	1.000	1.000	7752.77	46m45s	Works
13,000	1	1	-	-	-	40m48s	Killed
12,500	1	1	0.999	1.000	8075.84	53m18s	Works
12,600	1	1	1.000	0.999	8140.45	55m50s	Works
12,700	1	1	1.000	0.999	8205.06	55m26s	Works
12,800	1	1	0.999	1.000	8269.68	58m8s	Works

12,900	1	1	1.000	0.999	8334.29	57m36s	Works
12,950	1	1	1.000	0.999	8366.60	57m54s	Works
12,975	1	1	1.000	1.000	8382.75	58m48s	Works
12,990	1	1	1.000	0.999	8392.44	58m41s	Works
12,991	1	1	1.000	0.999	8393.09	59m7.3s	Works
12,992	1	1	0.999	1.000	8393.73	59m47s	Works
12,993	1	1	0.999	0.999	8394.38	59m5.2s	Works
12,994	1	1	1.000	0.999	8395.03	58m51s	Works
12,995	1	1	0.999	1.000	8395.67	60m00s	Works
12,996	1	1	1.000	1.000	8396.32	60m00s	Works
12,997	1	1	0.999	0.999	8396.97	60m00s	Works
12,998	1	1	1.000	0.999	8397.61	59m18s	Works
12,999	1	1	0.999	1.000	8398.26	60m00s	Works

The s = 10^{16} is within the limits of "long" C type (-9223372036854775808 to 9223372036854775807). So it isn't that.

All above runtimes are by running the script on a computer with x86_64 Lubuntu 18.04.3, 8GB DDR4, with a AMD Ryzen 3 2200G cpu (4 cores, 4 threads).

b) Three parameter A2(N, s, m) matrix:

N	s	m	Value of det(inv(A))	Value of det(A)	Entropy of inv A	Runtime	State of failure
8	1	10	0.999	0.999	13.30	0m00s	Works
8	1	10^2	0.999	1.000	27.58	0m00s	Works
8	1	10^3	0.0007	110.69	34.43	0m00s	Fails. Zero det
8	1	10^4	9E-10	0.0	34.43	0m00s	Fails. Zero det

8	1	10^5	9E-16	0.0	34.43	0m00s	Fails. Zero det
8	1	10^6	9E-22	0.0	34.43	0m00s	Fails. Zero det
8	1	10^7	1.1E-27	-2.2E+26	34.54	0m00s	Fails. Zero det
8	1	10^8	8.2E-34	1.1E+32	34.34	0m00s	Fails. Zero det
8	1	10^9	9E-40	0	34.43	0m00s	Fails. Zero det
8	1	10^10	9E-46	0	34.43	0m00s	Fails. Zero det
8	1	10^11	9E-52	0.0	34.43	0m00s	Fails. Zero det
8	1	10^12	1E-57	0.0	34.54	0m00s	Fails. Zero det
8	1	10^13	8E-64	0.0	34.43	0m00s	Fails. Zero det
8	1	10^14	1E-69	0.0	34.54	0m00s	Fails. Zero det
8	1	10^15	9E-76	0.0	34.43	0m00s	Fails. Zero det
8	1	10^16	9E-82	0.0	34.43	0m00s	Fails. Zero det