

Data set:

- Signal

`/data/scratch/userspace/pretz/scrappy-platypus-optimization/datafiles/
energy.sweets-dec20.xcd`

- Background

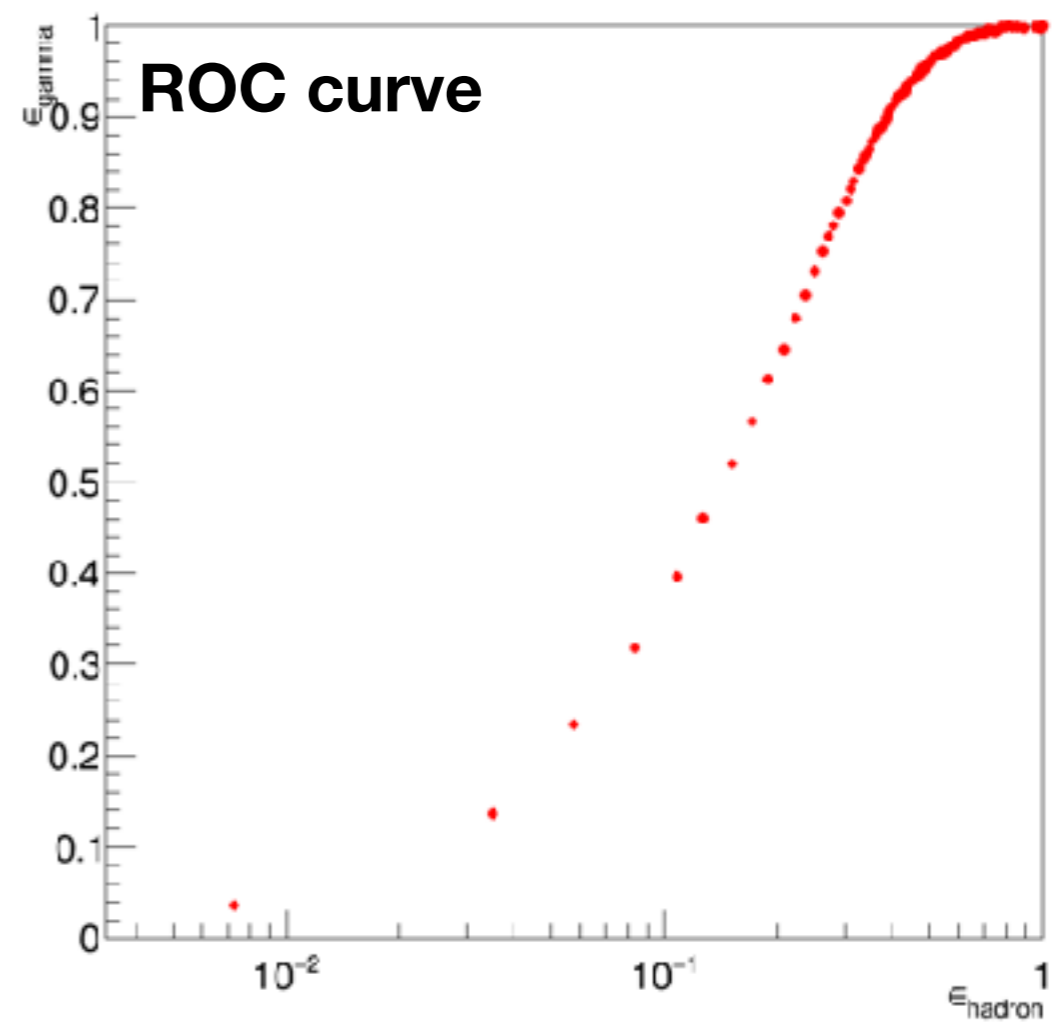
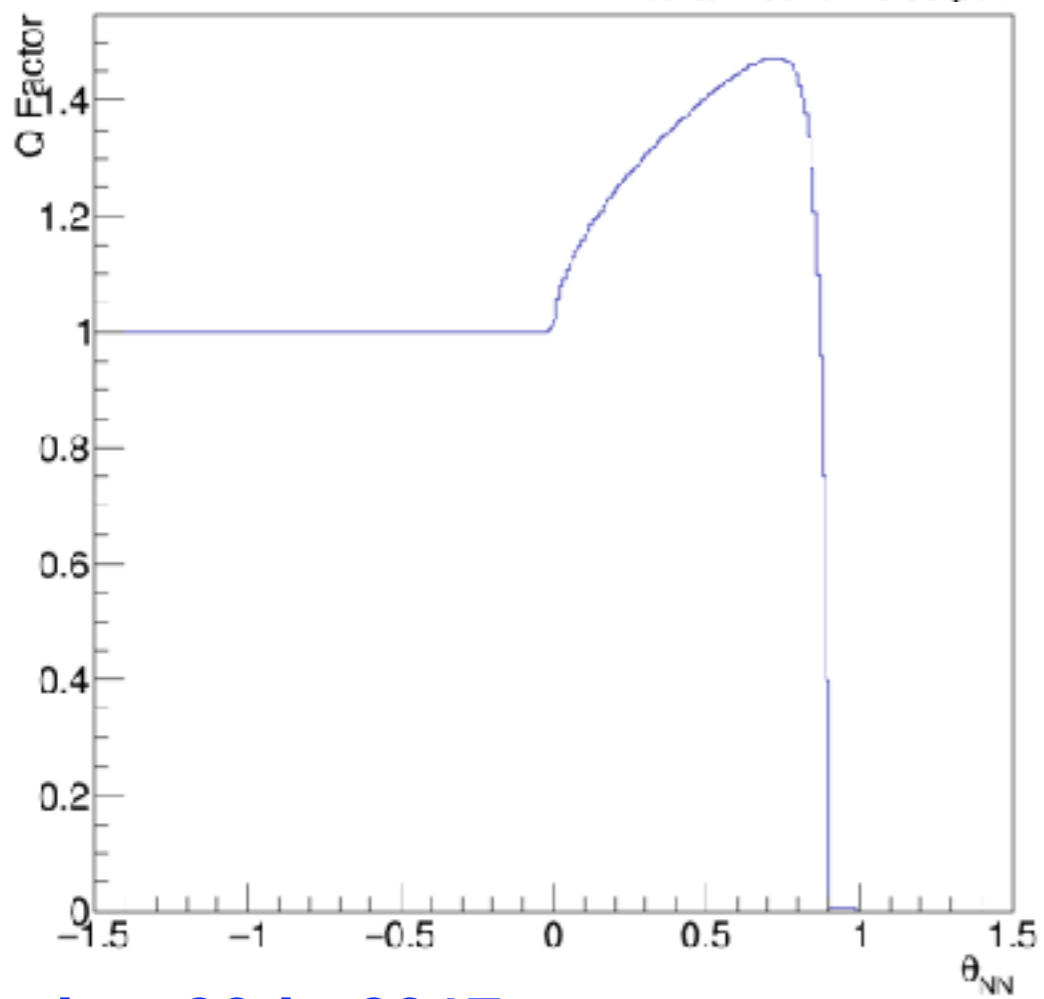
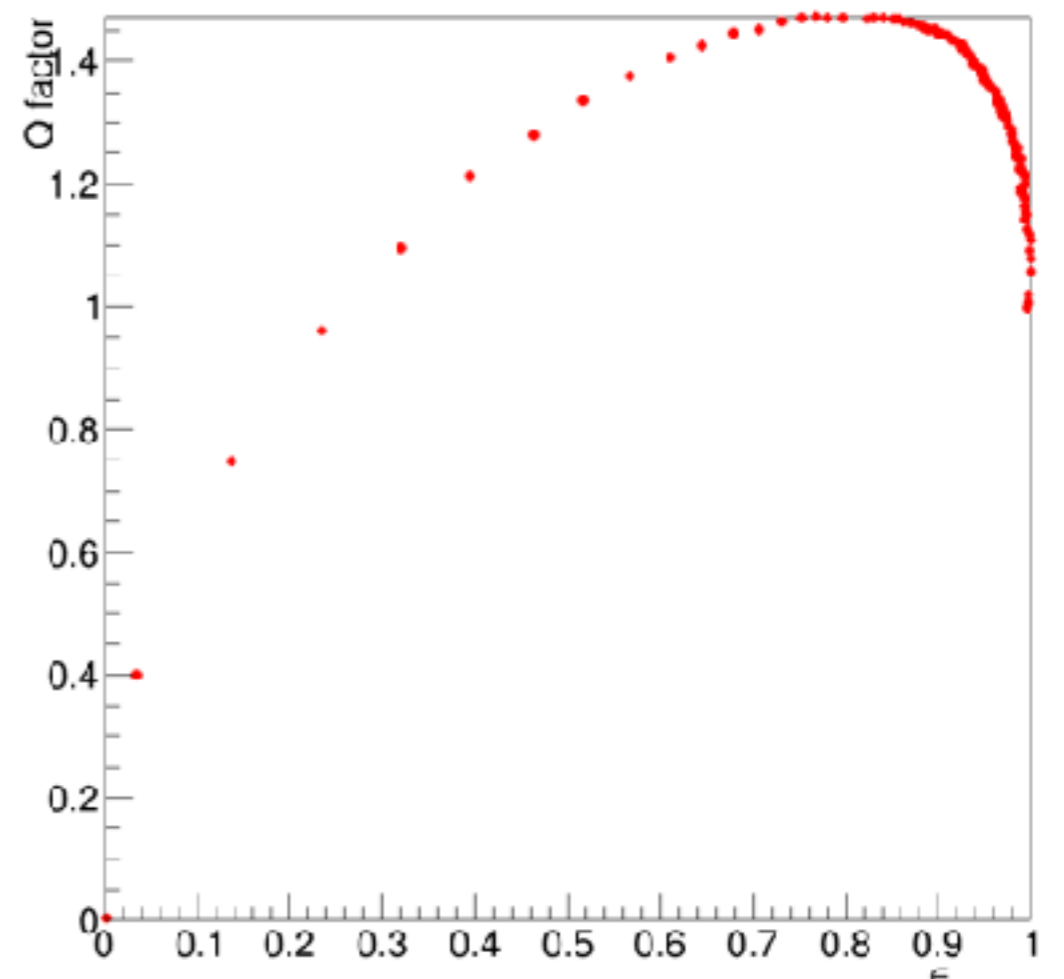
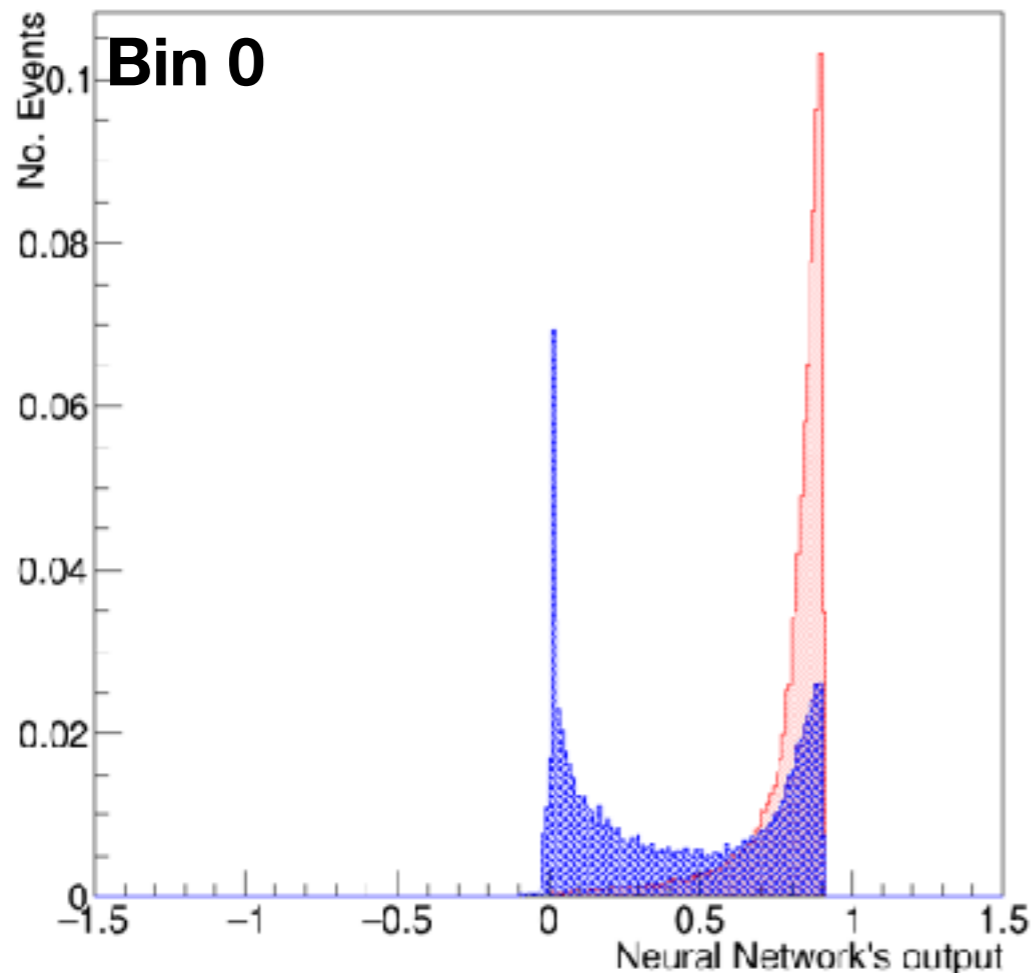
`/data/scratch/userspace/pretz/scrappy-platypus-optimization/datafiles/
energy.dec20.run005481.xcd`

Cuts:

- `rec.angleFitStatus==0`
- `rec.coreFitStatus==0`
- `rec.nChAvail>=700`
- `rec.coreFiduScale<=100`

Events used in each stage:

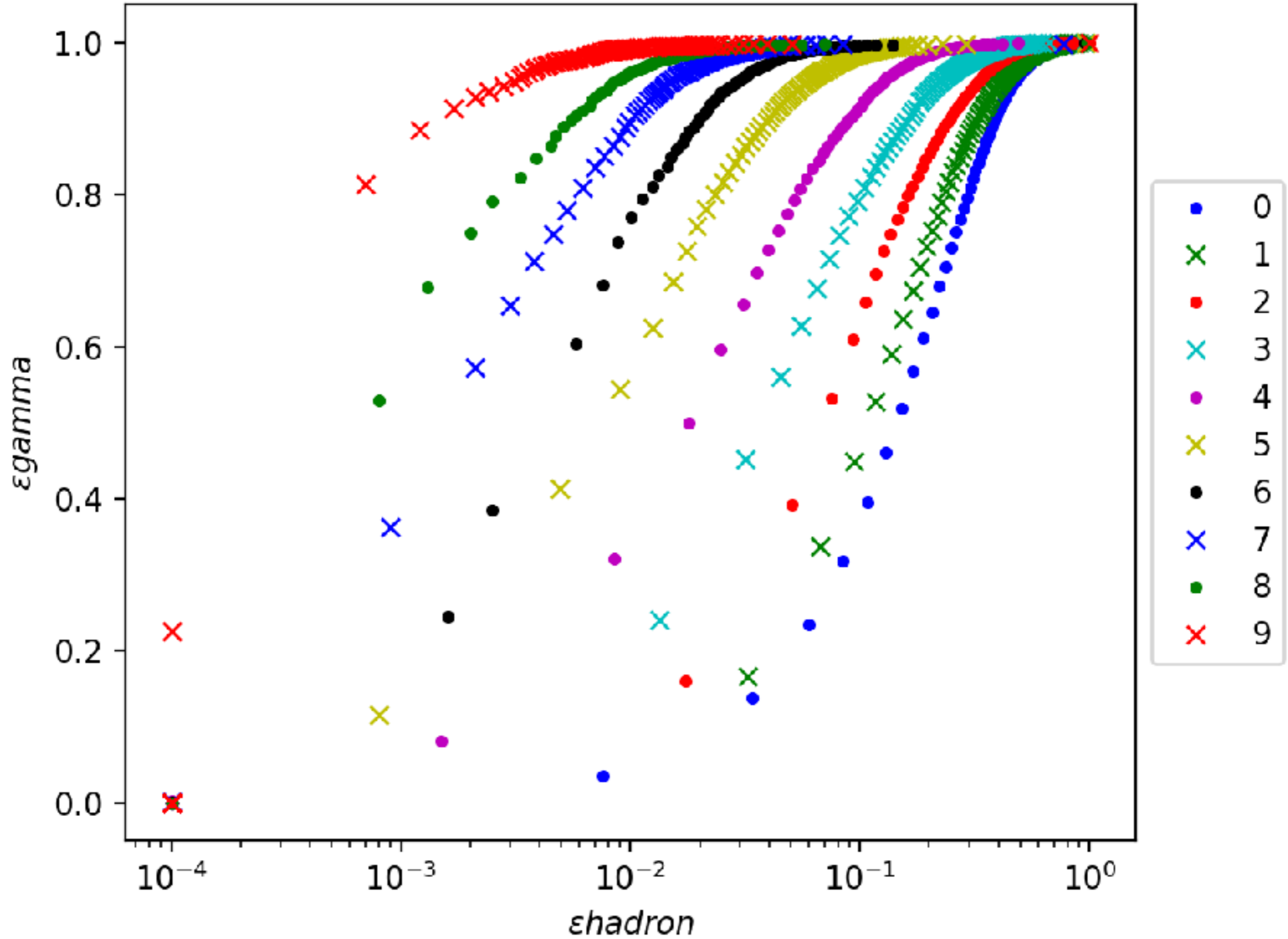
- Training: 25 %
- Verification: 25%
- Testin: 50 %



Train data set

Neural Network

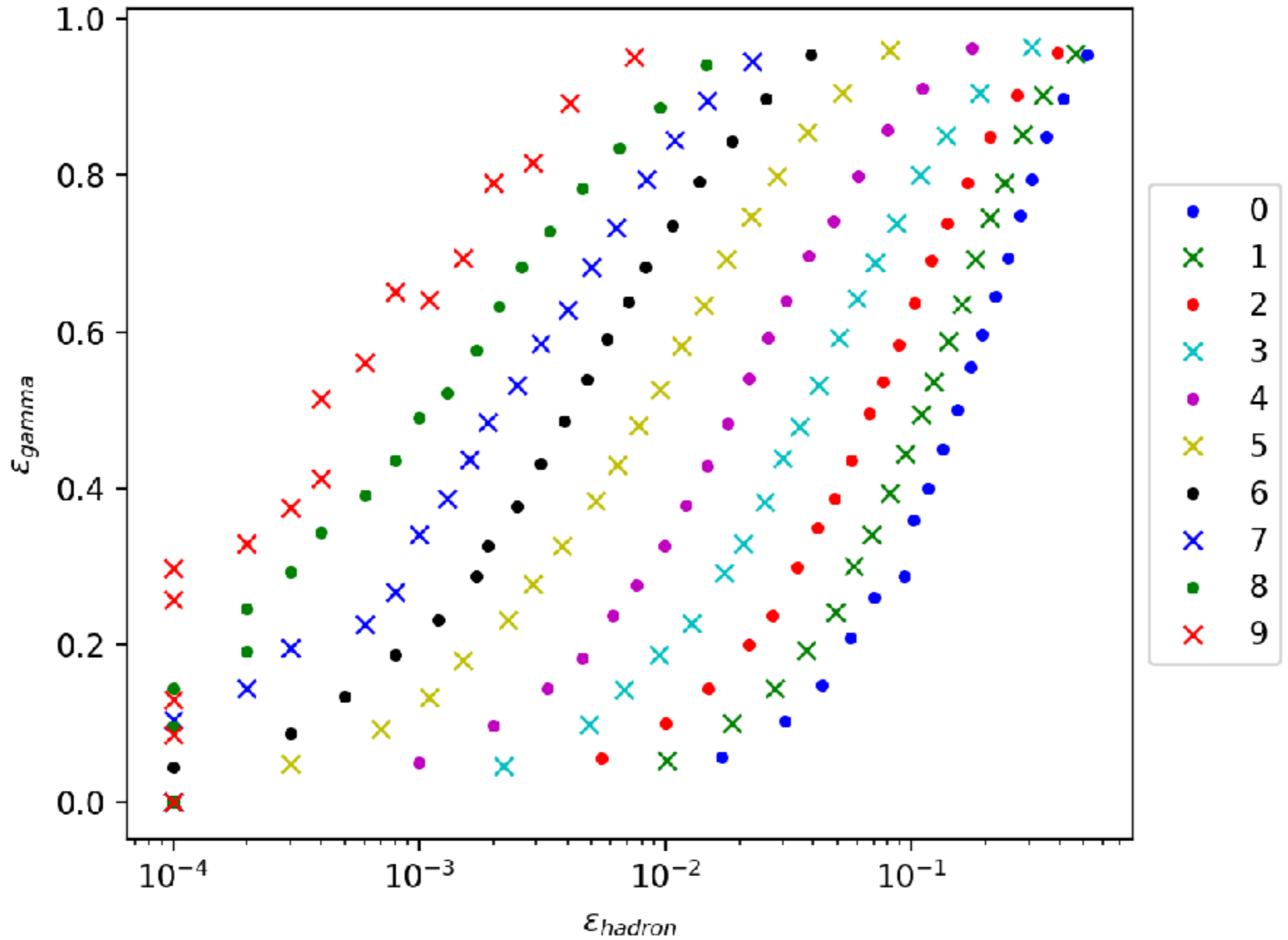
NN2F



Train data set

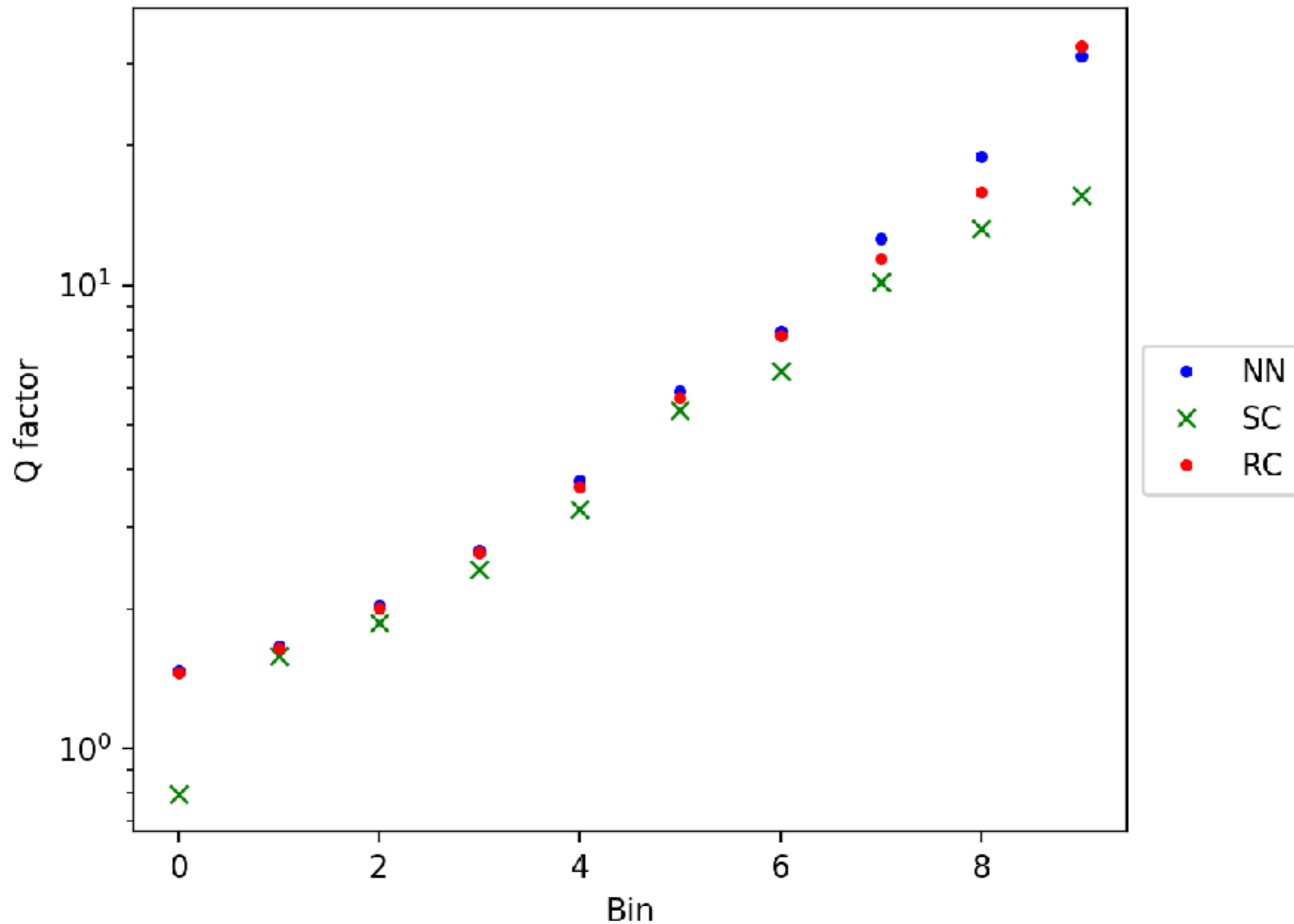
RC2F

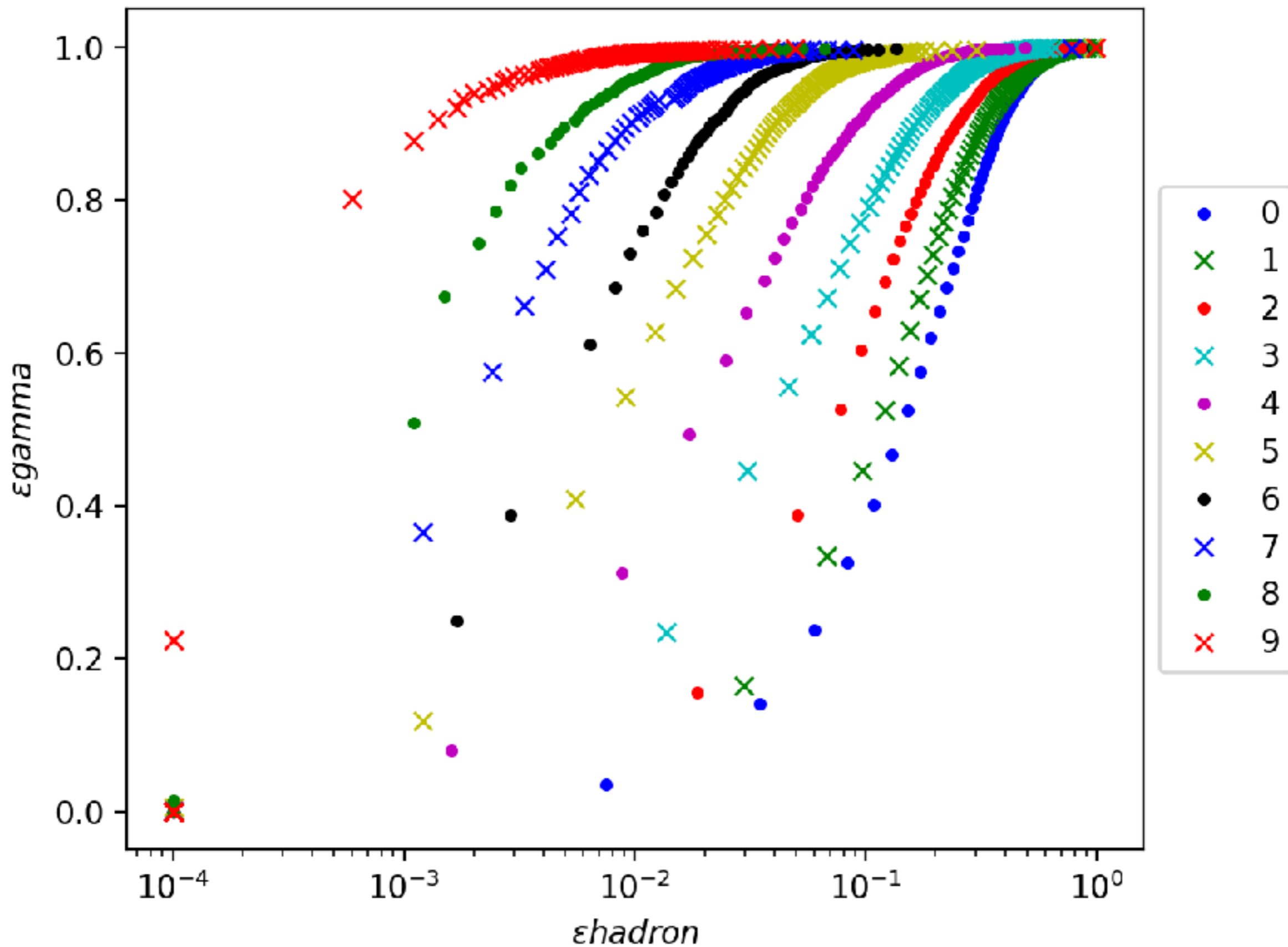
Rectangular Cut



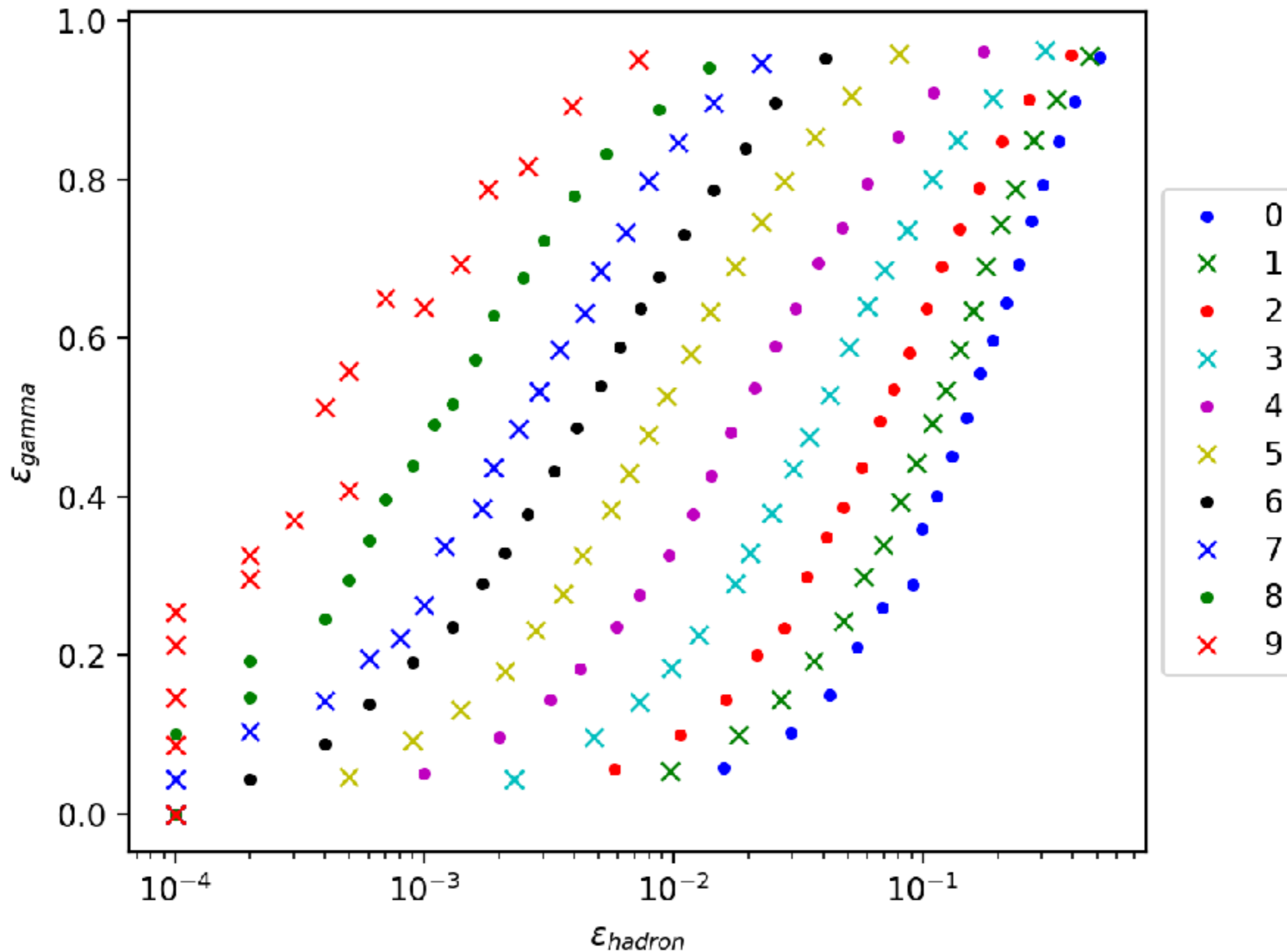
Train data set

C and P



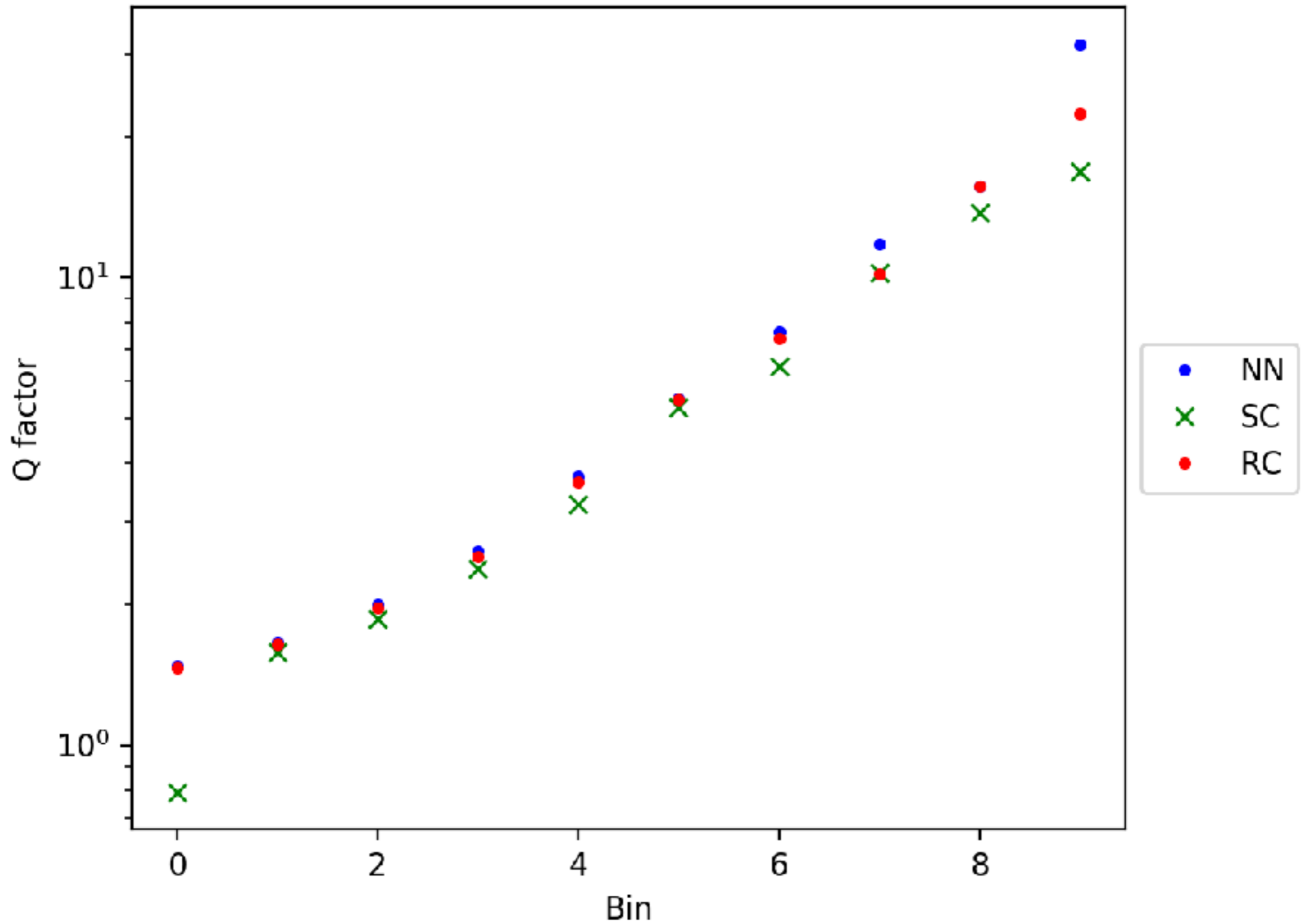


RC2F



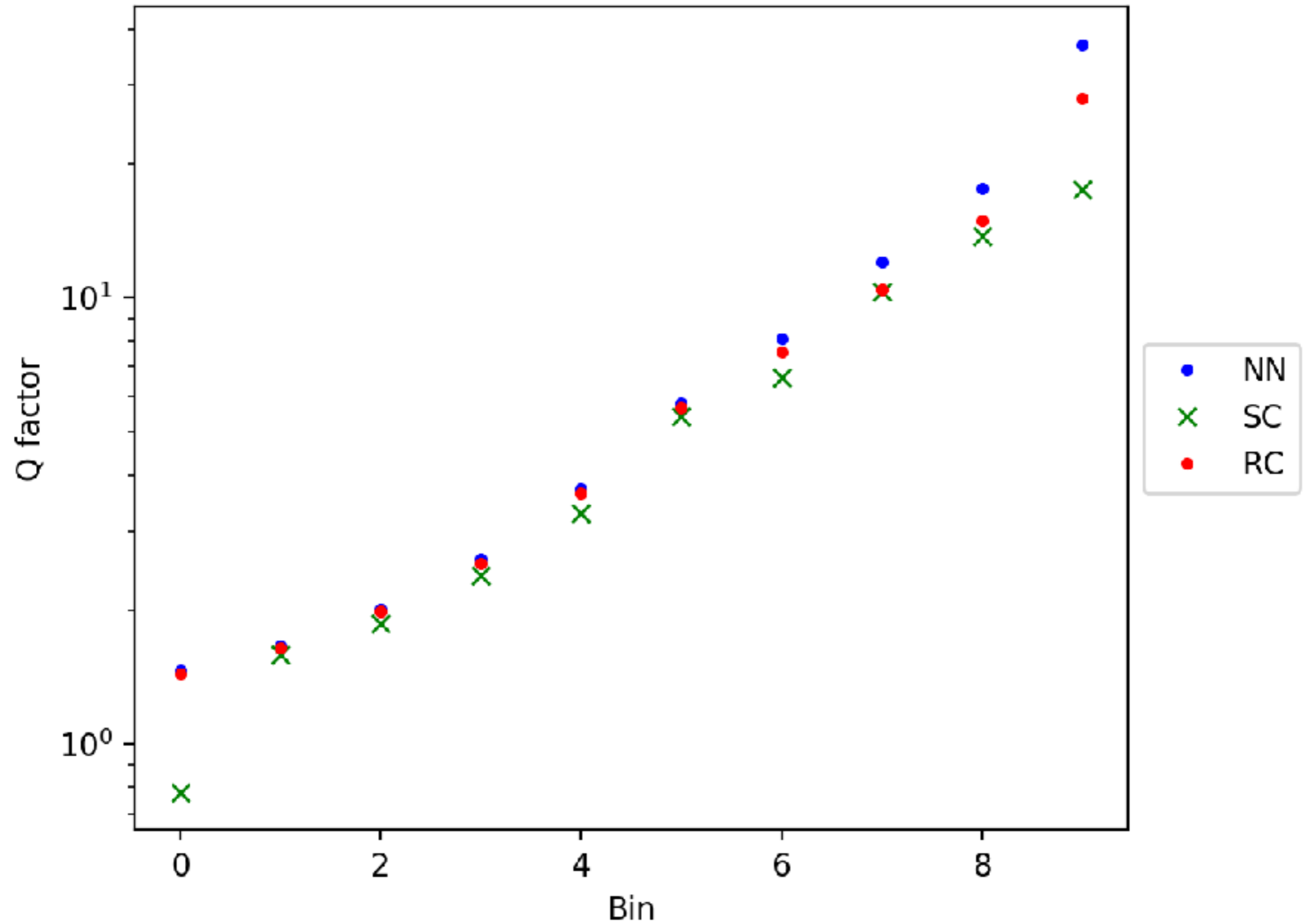
Verification data set

C and P



Test data set

C and P



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Choose the cut

Cut	Q	Gamma Efficiency	Hadron Efficiency
0.6500	1.4595	0.8782	0.3621
0.6600	1.4613	0.8720	0.3561
0.6700	1.4650	0.8656	0.3491
0.6800	1.4688	0.8586	0.3417
0.6900	1.4703	0.8504	0.3346
0.7000	1.4725	0.8417	0.3267
0.7100	1.4721	0.8309	0.3186
0.7200	1.4726	0.8206	0.3105
0.7300	1.4729	0.8092	0.3018
0.7400	1.4720	0.7965	0.2928
0.7500	1.4726	0.7829	0.2826
0.7600	1.4710	0.7677	0.2723
0.7700	1.4686	0.7508	0.2613
0.7800	1.4632	0.7310	0.2496
0.7900	1.4528	0.7057	0.2359
0.8000	1.4461	0.6798	0.2210
0.8100	1.4242	0.6456	0.2055
0.8200	1.4050	0.6106	0.1889
0.8300	1.3781	0.5684	0.1702
0.8400	1.3372	0.5195	0.1509
0.8500	1.2806	0.4614	0.1298

Train data set

Standard Cuts

Bin	Q	Gam eff	Had eff
0	0.7985	0.1750	0.0480
1	1.5809	0.7691	0.2367
2	1.8699	0.8512	0.2072
3	2.4373	0.7800	0.1024
4	3.2846	0.4995	0.0231
5	5.3812	0.5332	0.0098
6	6.5118	0.3564	0.0030
7	10.1505	0.6364	0.0039
8	13.2081	0.6416	0.0024
9	15.6391	0.8469	0.0029

Neural Network

Bin	Q	Gam eff	Had eff
0	1.4729	0.8092	0.3018
1	1.6609	0.7898	0.2261
2	2.0429	0.7262	0.1264
3	2.6715	0.6282	0.0553
4	3.7965	0.5965	0.0247
5	5.8880	0.4138	0.0049
6	7.9312	0.6044	0.0058
7	12.5451	0.5722	0.0021
8	18.9885	0.5294	0.0008
9	31.0677	0.8139	0.0007

Rectangular Cut

Bin	Q	Gam eff	Had eff
0	1.4600	0.8134	0.3104
1	1.6467	0.7656	0.2161
2	2.0091	0.7103	0.1250
3	2.6475	0.6147	0.0539
4	3.6732	0.6104	0.0276
5	5.7215	0.5109	0.0080
6	7.7577	0.5128	0.0044
7	11.3761	0.5108	0.0020
8	15.9060	0.5121	0.0010
9	32.7660	0.4120	0.0002

Standard Cuts

Bin	Q	Gam eff	Had eff
0	0.7933	0.1734	0.0478
1	1.5812	0.7714	0.2380
2	1.8632	0.8501	0.2082
3	2.3882	0.7814	0.1071
4	3.2826	0.4956	0.0228
5	5.2867	0.5284	0.0100
6	6.4579	0.3607	0.0031
7	10.2151	0.6478	0.0040
8	13.7746	0.6328	0.0021
9	16.8875	0.8490	0.0025

Verification data set

Neural Network

Bin	Q	Gam eff	Had eff
0	1.4794	0.8158	0.3040
1	1.6601	0.7890	0.2259
2	1.9993	0.7227	0.1306
3	2.5983	0.6243	0.0577
4	3.7631	0.5906	0.0246
5	5.5227	0.4089	0.0055
6	7.6633	0.6113	0.0064
7	11.7962	0.5760	0.0024
8	15.6686	0.5090	0.0011
9	31.4905	0.8015	0.0006

Rectangular Cut

Bin	Q	Gam eff	Had eff
0	1.4612	0.8161	0.3119
1	1.6376	0.7627	0.2169
2	1.9691	0.7069	0.1289
3	2.5341	0.6103	0.0580
4	3.6443	0.6054	0.0276
5	5.4702	0.5055	0.0085
6	7.4051	0.5213	0.0050
7	10.1700	0.5230	0.0026
8	15.6621	0.5077	0.0011
9	22.3499	0.4002	0.0003

Test data set

Standard Cuts

Bin	Q	Gam eff	Had eff
0	0.7797	0.1737	0.0496
1	1.5909	0.7697	0.2341
2	1.8656	0.8494	0.2073
3	2.3799	0.7775	0.1067
4	3.2855	0.4972	0.0229
5	5.4318	0.5310	0.0096
6	6.6400	0.3534	0.0028
7	10.3231	0.6399	0.0038
8	13.7263	0.6404	0.0022
9	17.4766	0.8423	0.0023

Neural Network

Bin	Q	Gam eff	Had eff
0	1.4604	0.8067	0.3051
1	1.6569	0.7872	0.2257
2	2.0069	0.7245	0.1303
3	2.6003	0.6208	0.0570
4	3.7407	0.5955	0.0253
5	5.8057	0.4057	0.0049
6	8.0881	0.6061	0.0056
7	12.0217	0.5678	0.0022
8	17.5536	0.5260	0.0009
9	36.9189	0.8006	0.0005

Rectangular Cut

Bin	Q	Gam eff	Had eff
0	1.4410	0.8077	0.3142
1	1.6436	0.7620	0.2149
2	1.9850	0.7099	0.1279
3	2.5365	0.6061	0.0571
4	3.6455	0.6097	0.0280
5	5.6770	0.5041	0.0079
6	7.5705	0.5153	0.0046
7	10.4569	0.5074	0.0024
8	14.8887	0.5138	0.0012
9	27.9292	0.3918	0.0002