

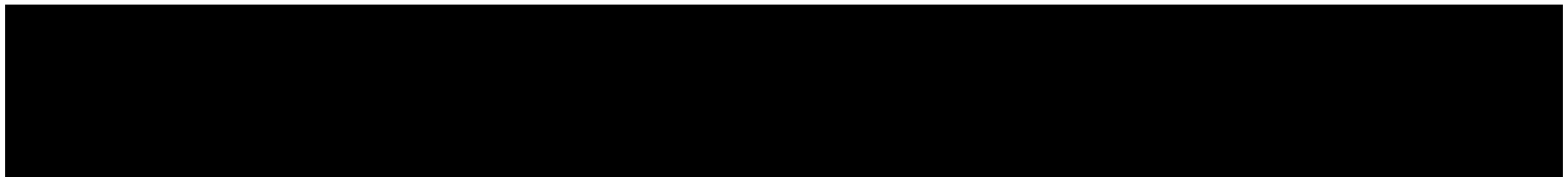
Data that used for:

- Signal (MC)

`/data/archive/hawcroot/sim/reco/aerie_svn_39351/
reco_large_MC_set_curv0/sweets/2.63_3.45e-11_1000000_20_1.0/
succeeded/sweets_2.63_3.45e-11_1000000_20_1.0_gamma.xcd`

- Background (Real data)

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



Events used in each stage:

◆ Training:

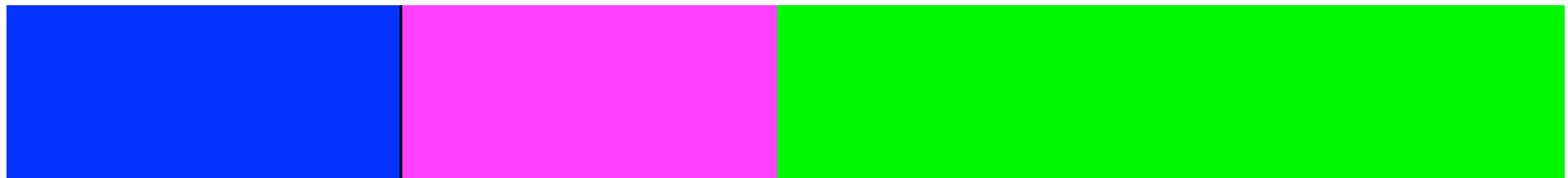
25 %

◆ Verification:

25%

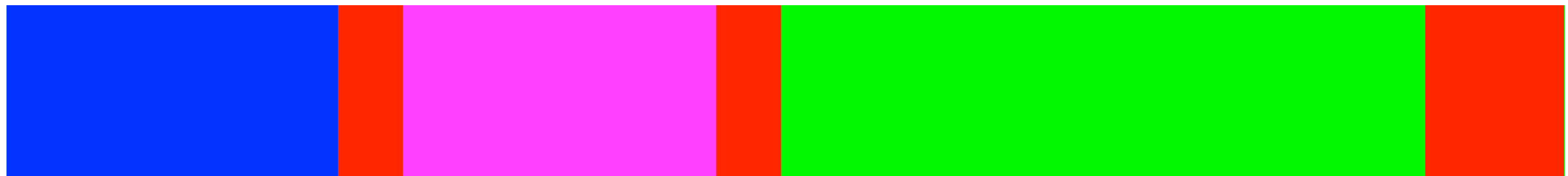
◆ Testing:

50 %



- `rec.angleFitStatus==0`
- `rec.coreFitStatus==0`
- `rec.nChAvail>=700`

- `rec.coreFiduScale<=100`
- `rec.delAngle < Opt Angle`
(Only gamma file)



Using a TMVA:

- Neural network (NN)
- Rectangular cuts -Method: Genetic Algorithm (RC GA)

2 Inputs

1. Compactness
2. rec.PINC

3 Inputs

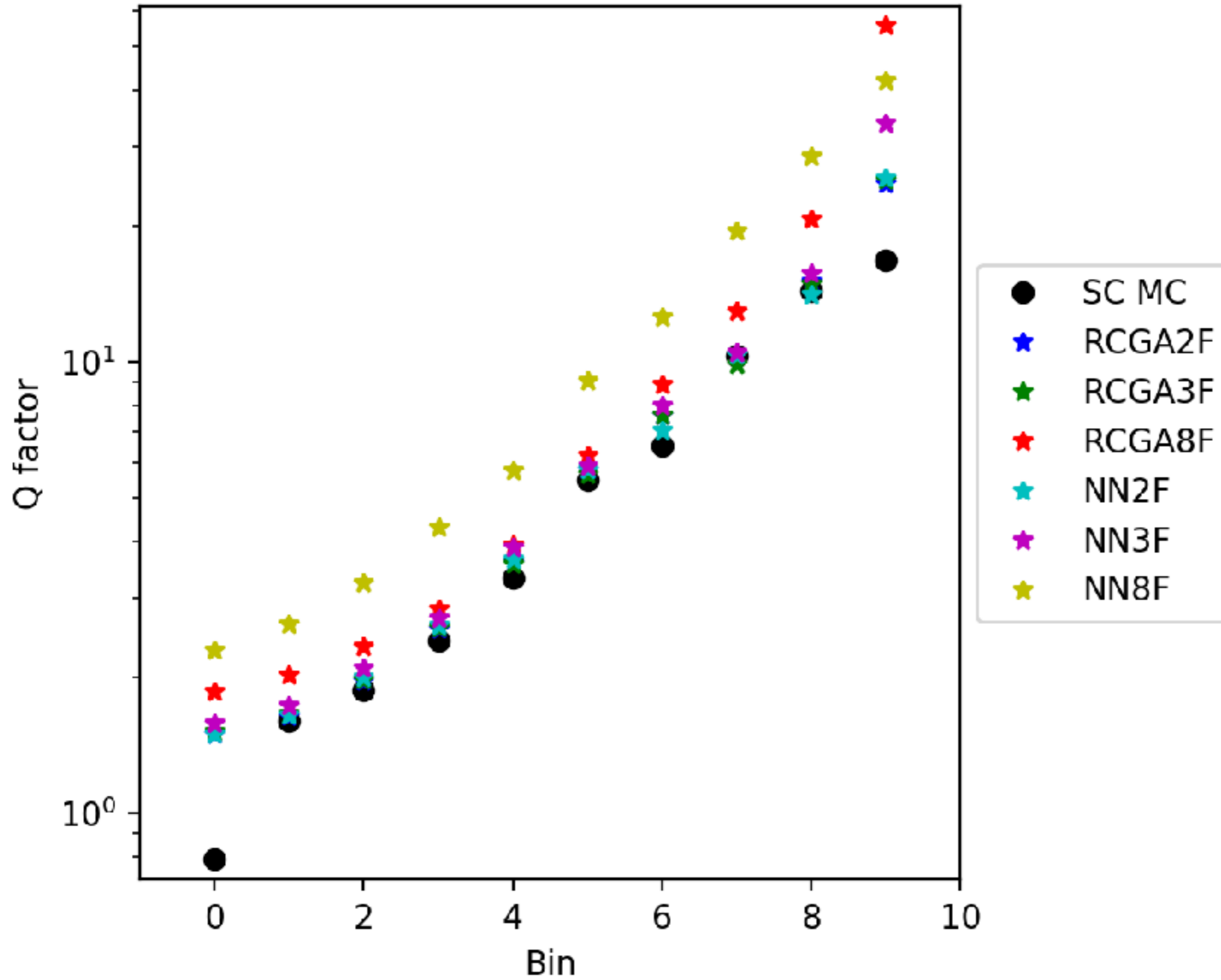
1. Compactness
2. rec.PINC
3. rec.logNNEnergy

8 Inputs

1. Compactness
2. rec.PINC
3. rec.planeChi2
4. rec.SFCFChi2
5. rec.CxPE40SP
Time
6. rec.LDFAge
7. rec.LDFChi2
8. rec.disMax

MC Testing

MC testing

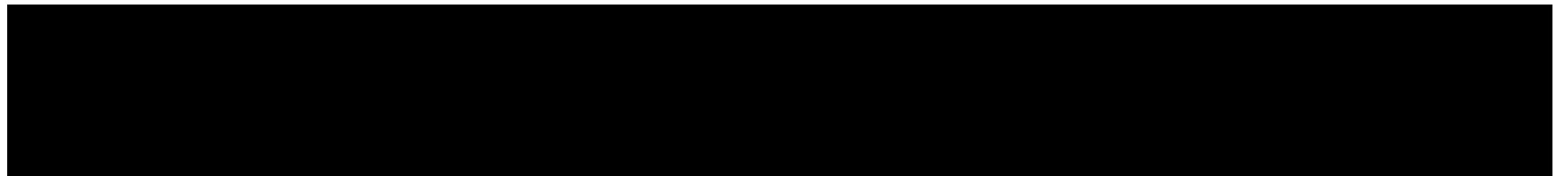


Data used for making Crab maps

- From November, 2014 to July, 2015

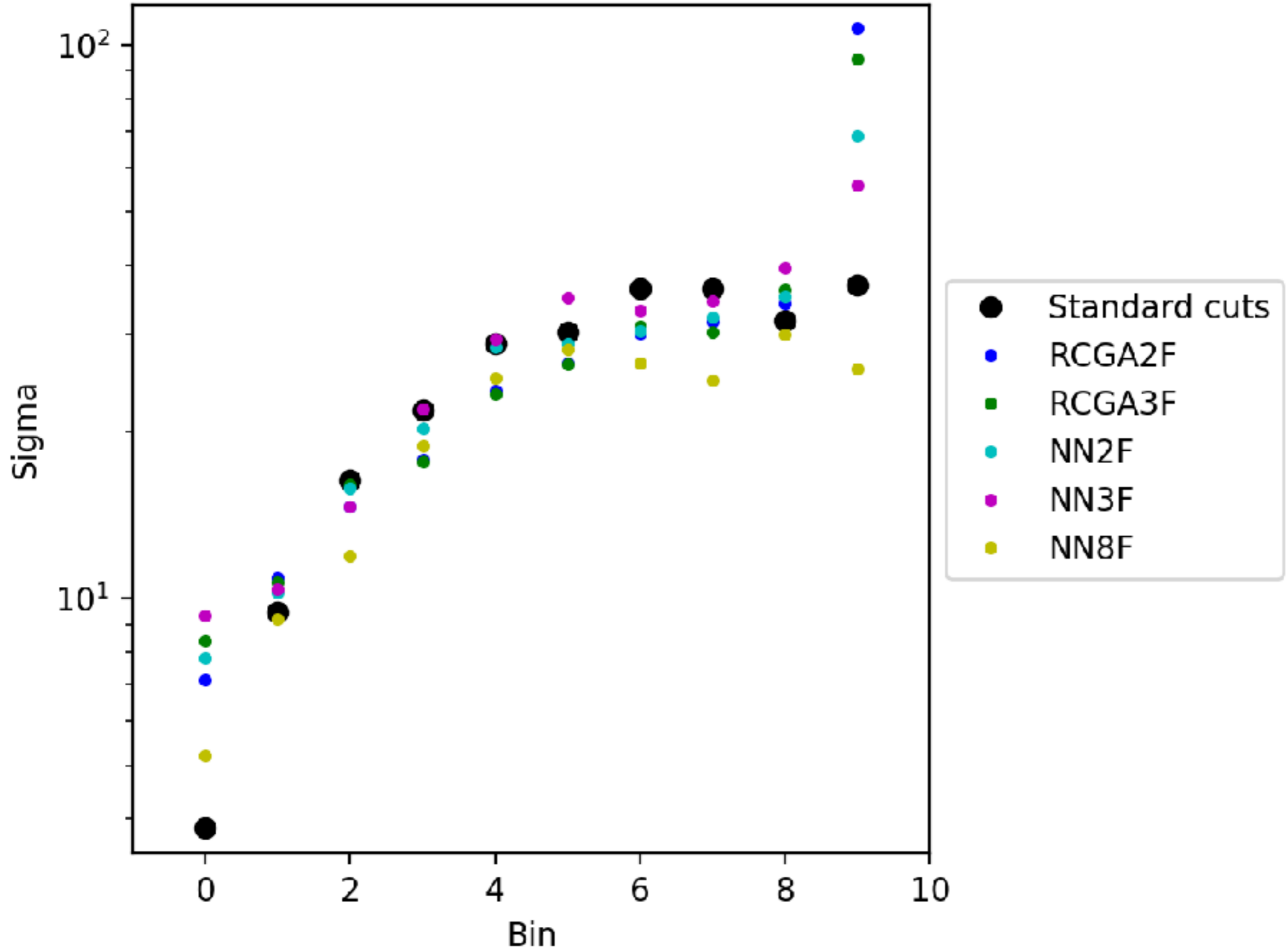
[/data/archive/hawcroot/data/hawc/reconstructed/hawcprod/hawcprod-subsets/crab-strip/v2.02.00/config-28016/reco_xcdf](#)

Using Simple Analysis Tools



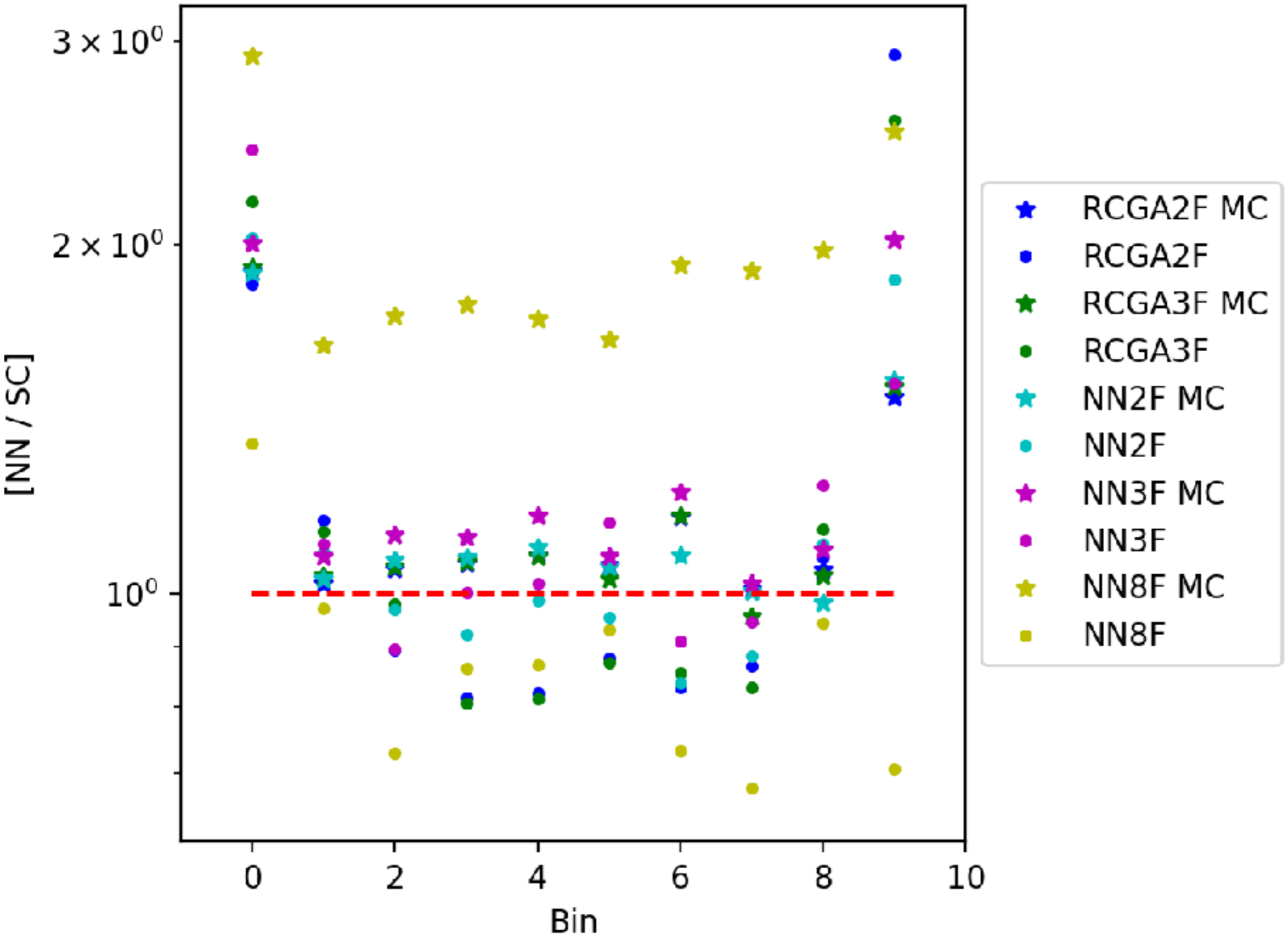
Real Data (Crab) Testing

Crab



Ratio (NN or RC / SC)

Comparison



Back Slide

liff-Make0ptApertures -d 22.02

-i /data/archive/hawcroot/maps/maps-20170630/liff/
response_aerie_svn_27754_systematics_best_mc_test_nobroadpulse_10pctlogchargesmearin
g_0.63qe_25kHzNoise_run5481_curvature0_index3.root

Bin	fhit min	fhit max	opt del angle
0	0.044	0.067	0.02356
1	0.067	0.105	0.01627
2	0.105	0.162	0.01143
3	0.162	0.247	0.00861
4	0.247	0.356	0.00642
5	0.356	0.485	0.00478
6	0.485	0.618	0.00422
7	0.618	0.740	0.00356
8	0.740	0.840	0.00302
9	0.840	1.010	0.00269

Standard cut		
Bin	C	P
0	16.0	1.4
1	7.0	2.2
2	9.0	3.0
3	11.0	2.3
4	15.0	1.9
5	18.0	1.9
6	17.0	1.7
7	15.0	1.8
8	15.0	1.8
9	3.0	1.6