

γ -h and MARS

Status Report

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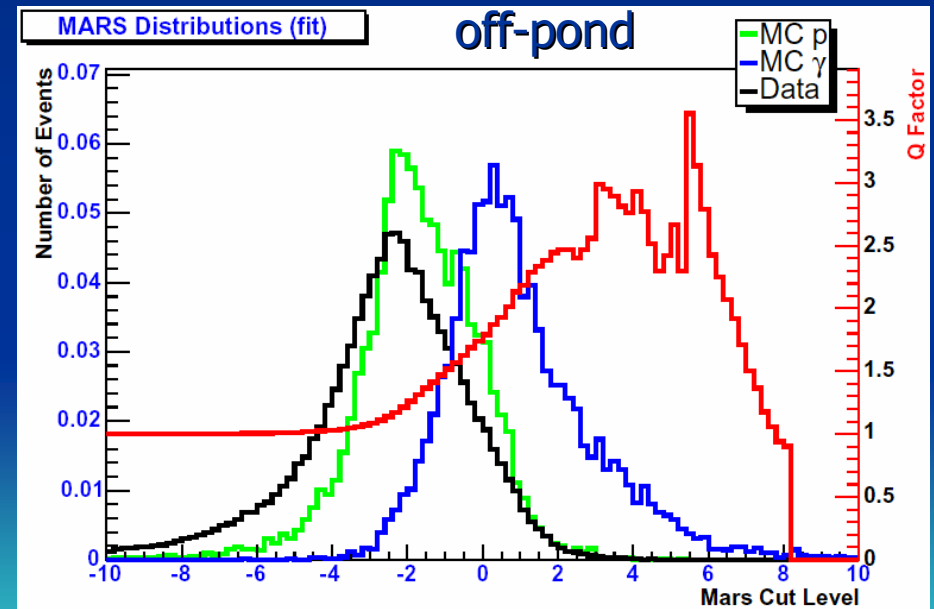
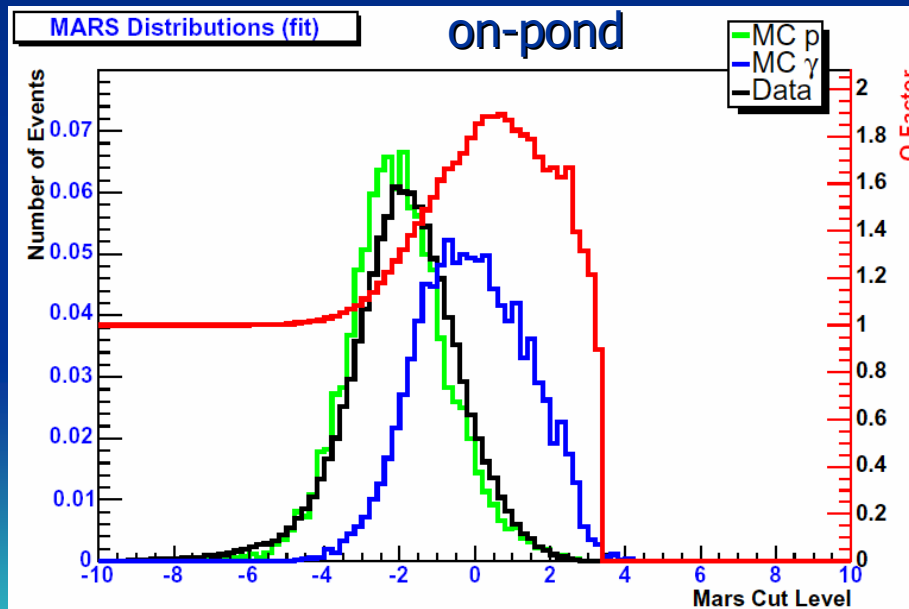
Milagro Collaboration Meeting

I/O

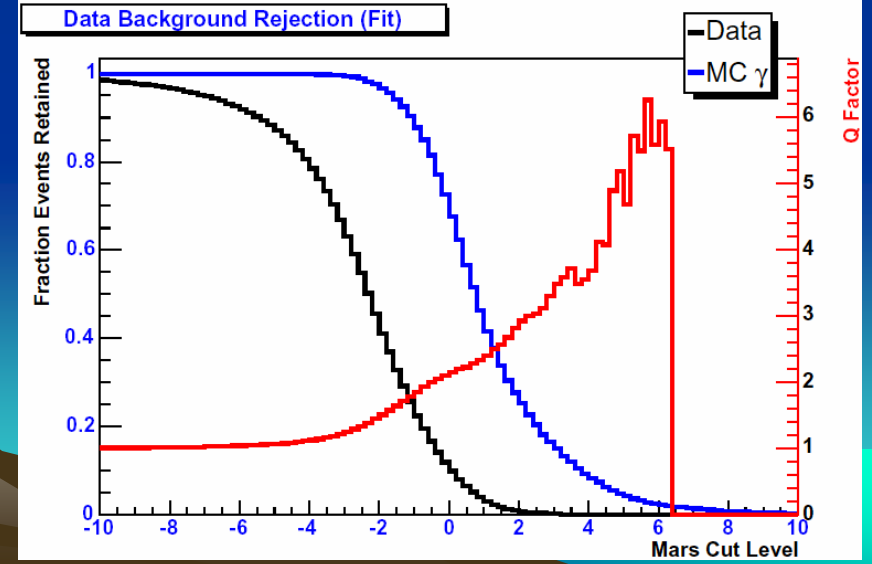
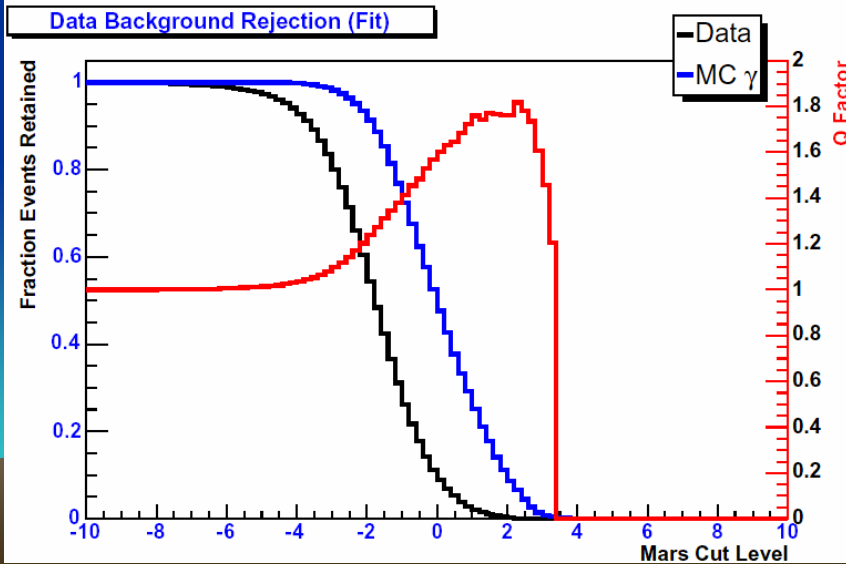
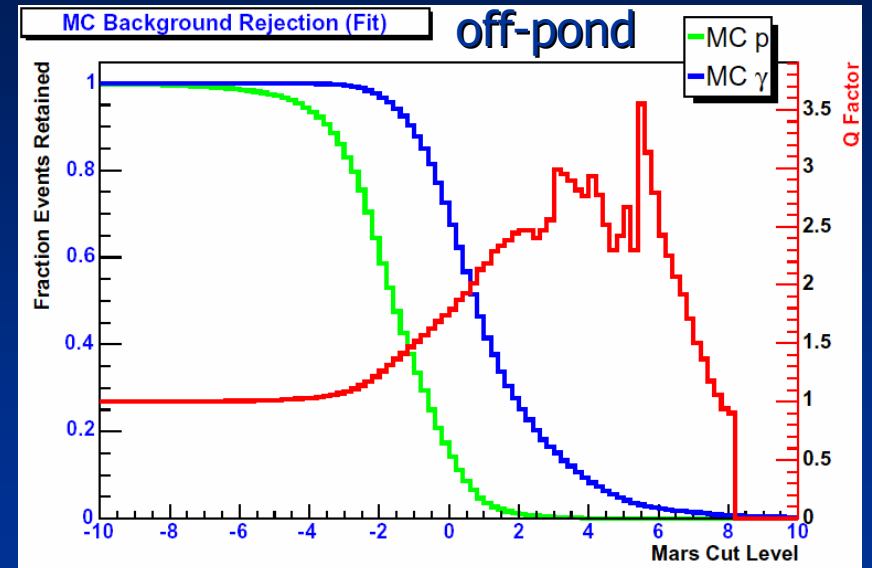
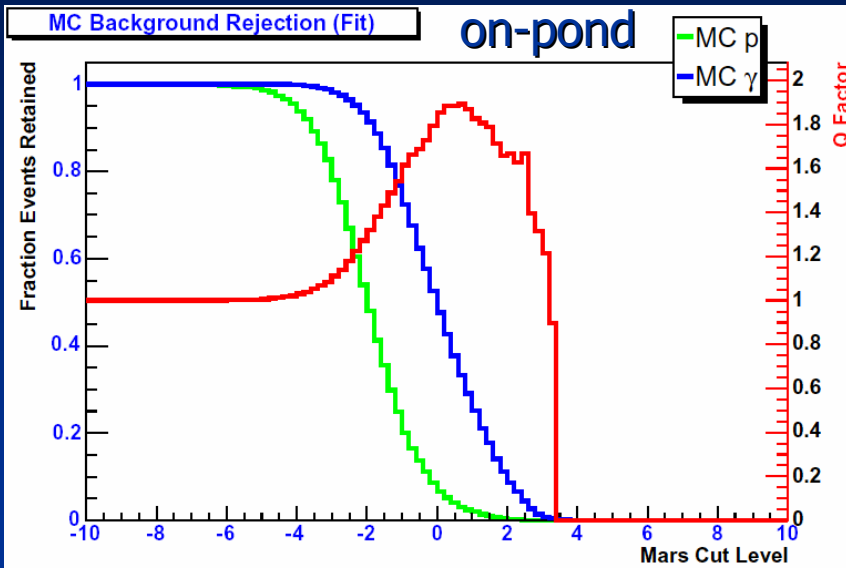
- Monte Carlo input
 - γ : 0.1-100 TeV; 29,267 of 1,309,207 events
 - $nFit \geq 20$, $dang < 1.2$
 - p: 0.05-100 TeV; 31,645 of 1,948,216 events
 - $nFit \geq 20$
- Data input
 - GRB_5111_0010: 264,697 of 385,431 events
 - $nFit \geq 20$
- MARS output
 - $\log[\text{Prob}(\gamma)/\text{Prob}(p)]$ where $\text{Prob}(p) = 1 - \text{Prob}(\gamma)$

MARS Distributions

- Used X2, nHitMu, log(sumPEbot), NB2, NB8
 - Chosen from relative “importance” given by MARS

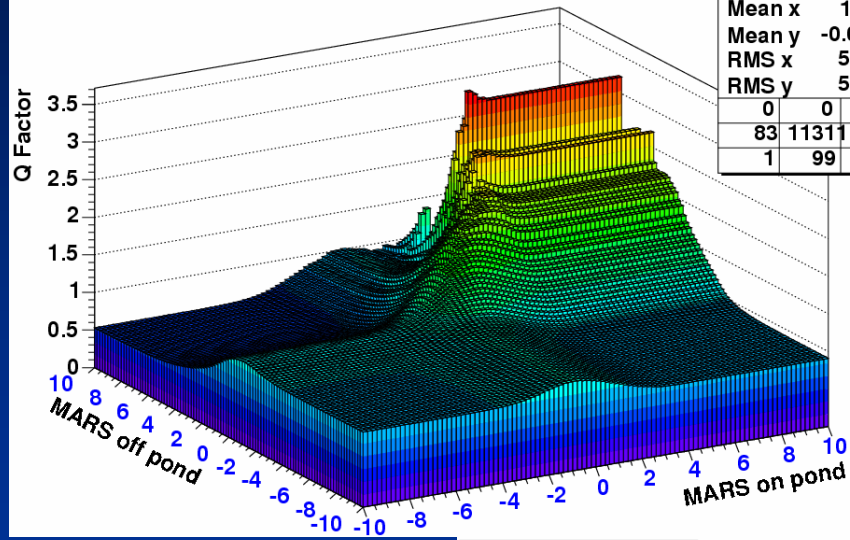


Events Retained



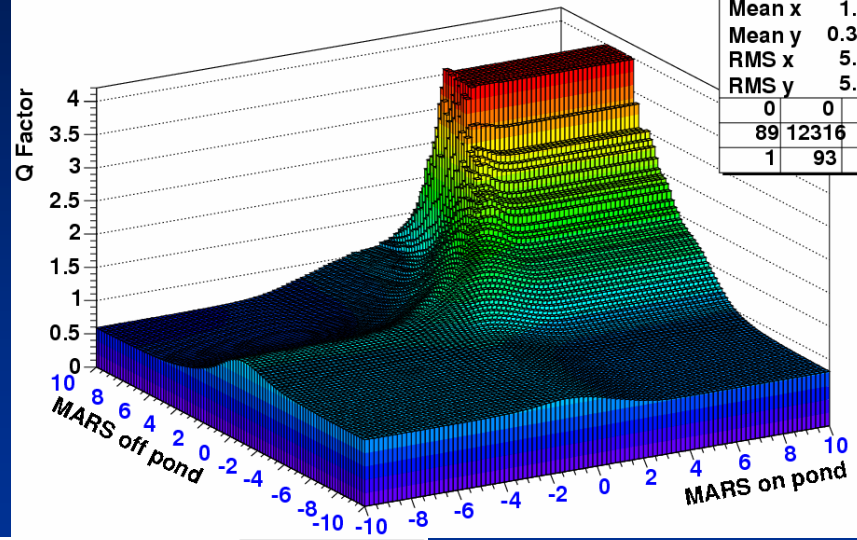
2-d Q Factor

2-d Q Factor, MARS (MC proton)



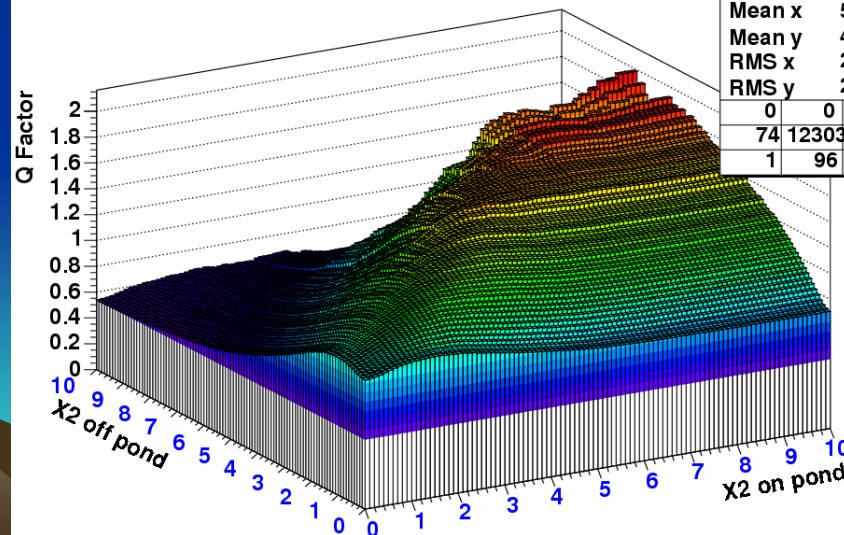
Q		
Entries	9904	
Mean x	1.114	
Mean y	-0.0681	
RMS x	5.573	
RMS y	5.213	
0	0	0
83	11311	0
1	99	0

2-d Q Factor, MARS (Data)



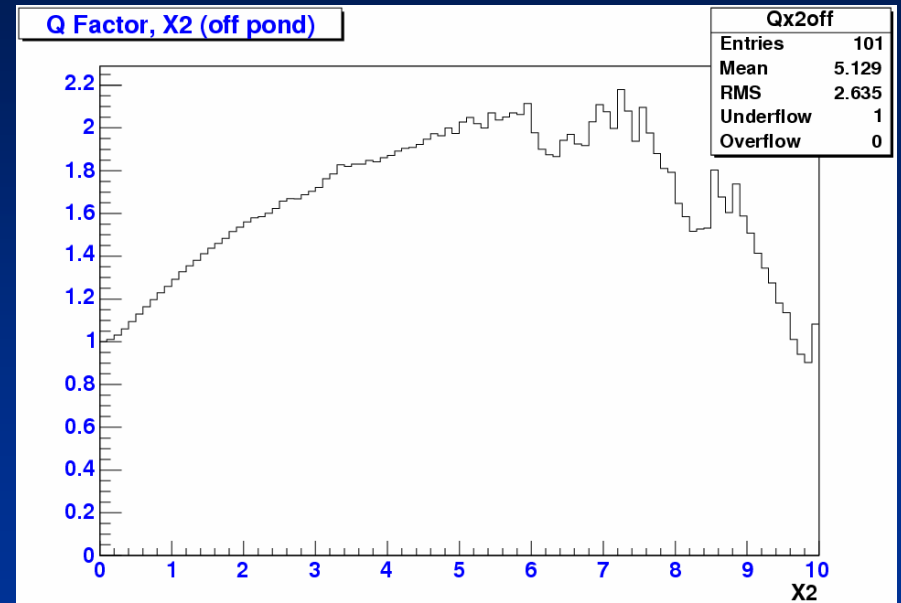
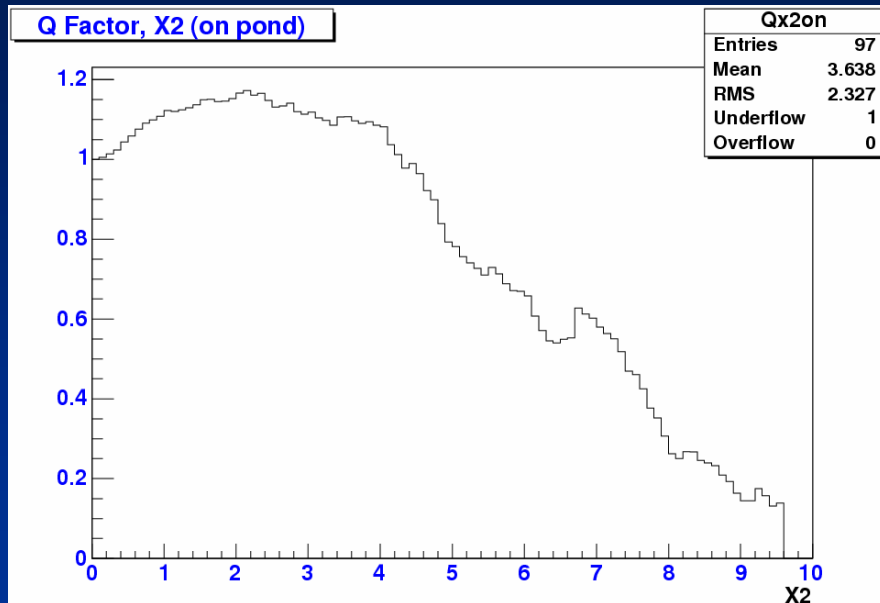
QD		
Entries	9640	
Mean x	1.262	
Mean y	0.3433	
RMS x	5.596	
RMS y	5.109	
0	0	0
89	12316	0
1	93	0

2-d Q Factor, X2

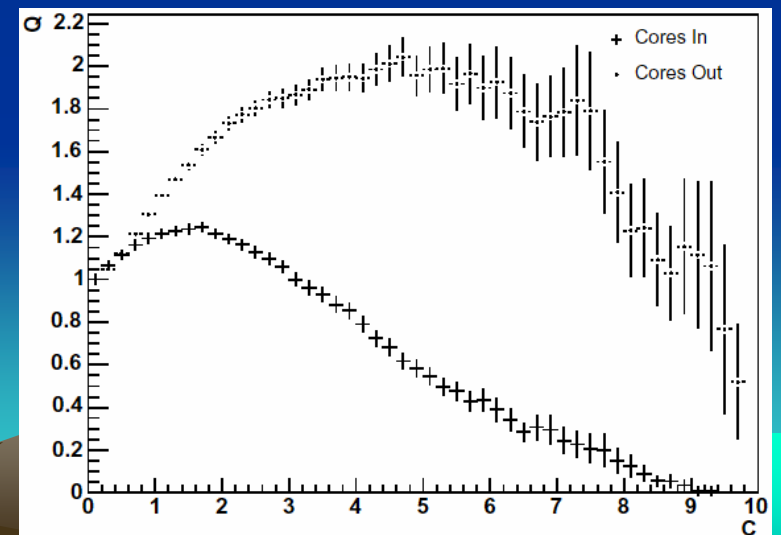


Qx2		
Entries	10201	
Mean x	5.529	
Mean y	4.685	
RMS x	2.782	
RMS y	2.648	
0	0	0
74	12303	0
1	96	0

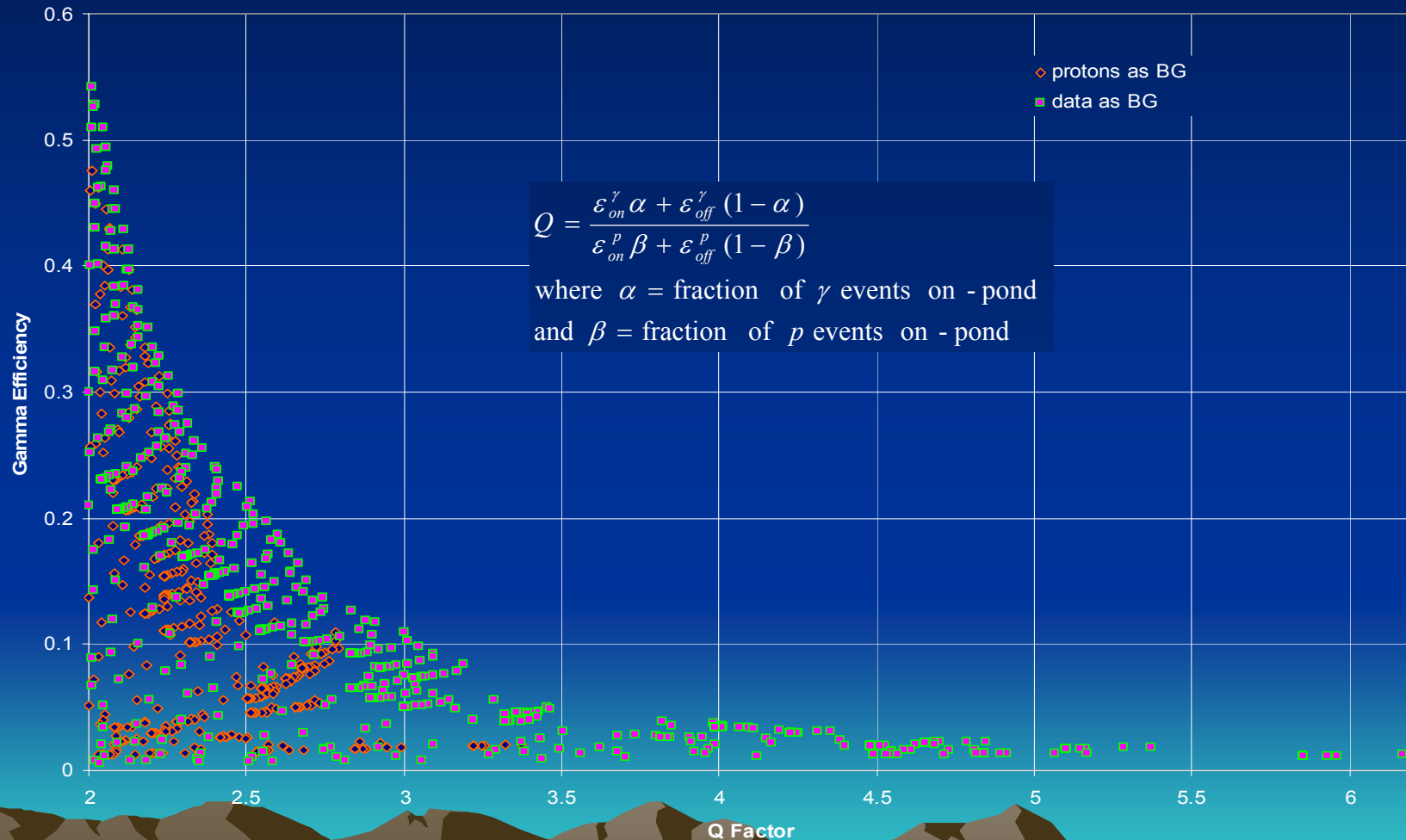
Consistency Check



- Checked X2 Q against APJ595 (Crab Paper)

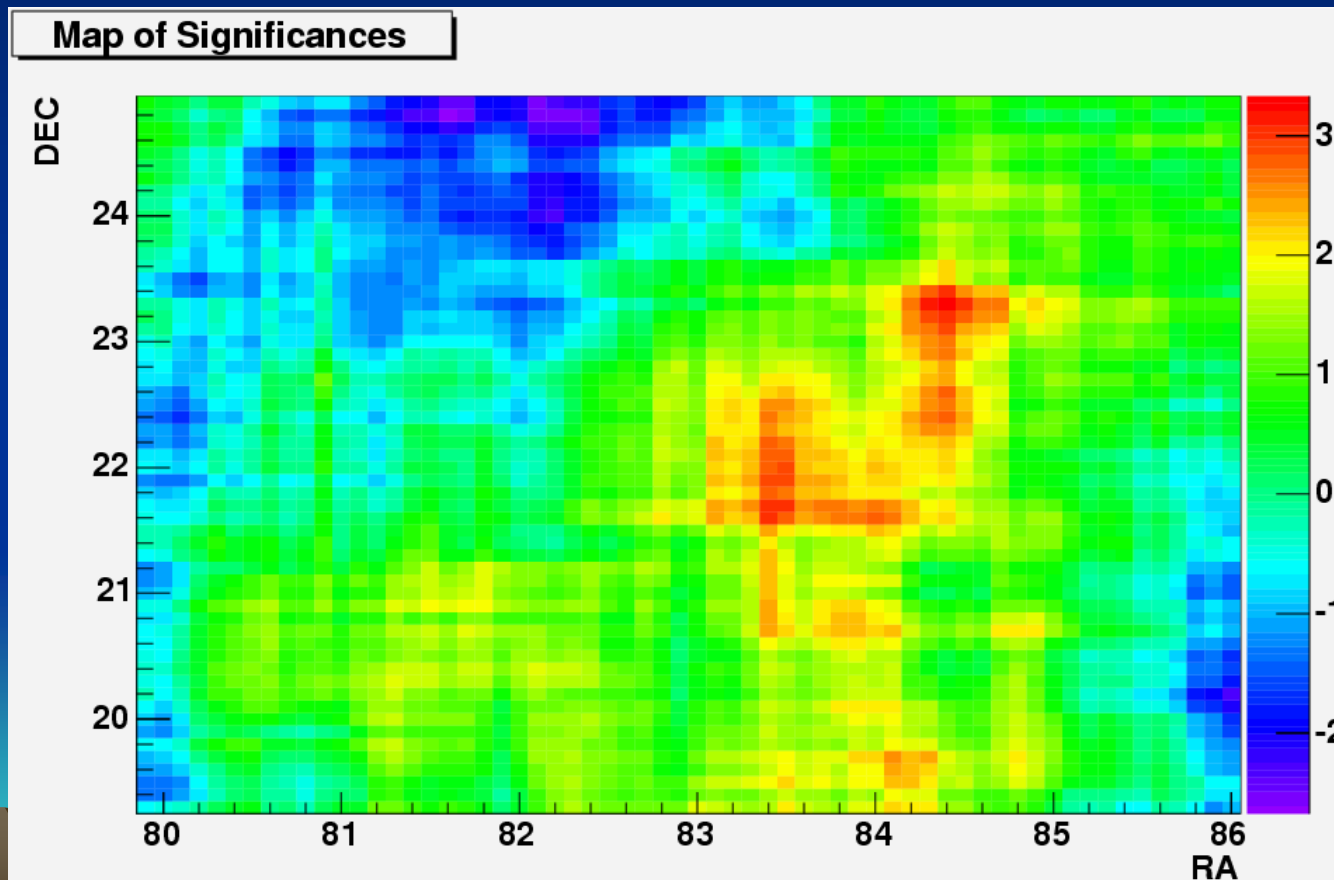


γ Efficiency for $Q \geq 2$



Sky Map with MARS

- 193 days of Crab REC data, Nov 2002 to June 2003



Further Work

- Use larger sample of MC data
 - Create/use low energy MC
 - Create/use helium MC
- Run on more Crab events
- Examine other sources
- Use other MARS parameters
 - Compare to neural network ANN

