

Progress Update

Trevor Towstego
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Current Status of Aluminum Sourcing

Company	Aluminum Type	MOQ	Price/Piece (USD)	Mould Price (USD)	Add. Fees (USD)	Min Price (USD)	OD Tolerance	WT Tolerance	Shipping notes
1. Modern International Trade Co.	6061	10	430			4300	+2.40/-0.80 mm	+/- 10%	CIF Toronto
2. Foshan Kaiya Aluminum Co.	6063-T5	1	114.56	2132	517.29	2763.85	+/- 2 mm		CIF Toronto
3. Ningbo City Beilun Fayi Metal Product Co.	6061	10	471.4			4714	+/- 2 mm		CIF Toronto

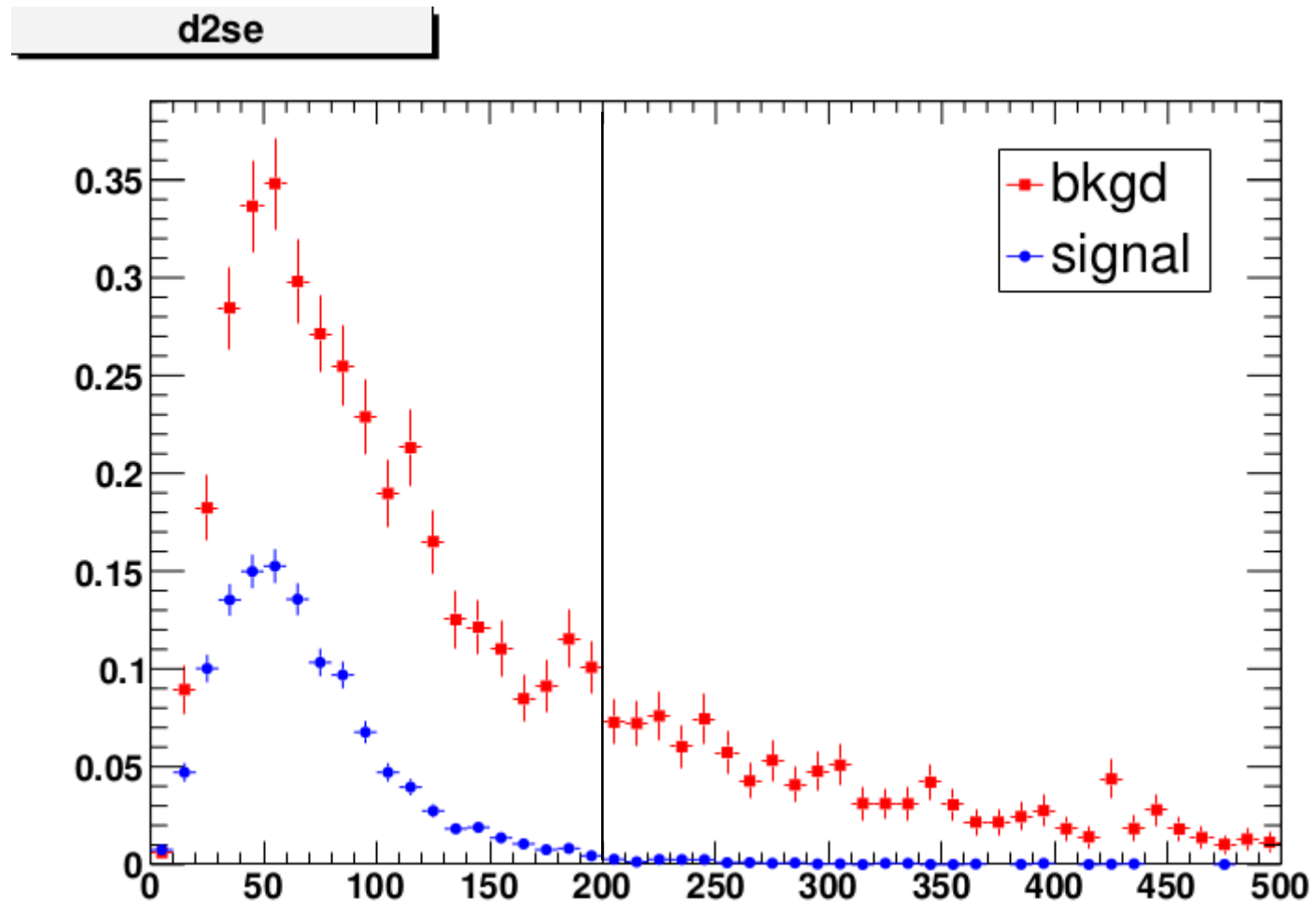
1. Shipping changed to CIF Toronto – added 20 USD per piece For 10 pieces, 12-15 working day production time. For full order, 22-25 working days
2. Additional courier fee for small order, refunded when placing full order. For initial order, 45 day production time because of new mould. For full order, 15 day production time. Can also order 1m long piece as small order
3. Shipping changed to CIF Toronto – added 239.90 USD per piece. For 10 pieces, 20 day production time. For ~800 pieces, 50 day production time

ν_e CC1 π^+ Status

- Started investigating some cuts
 - Distance between sub-events (d2se) in 2Repi1de selection
 - wall, towall
 - multi-segment muon fit likelihood
 - pi0 fit likelihood
- In following plots, “signal” is oscillated nue CC, “bkgd” is everything else
- Examples are shown for T2K, FHC, NH, dcp=0
- $FOM = S/\sqrt{S+B}$

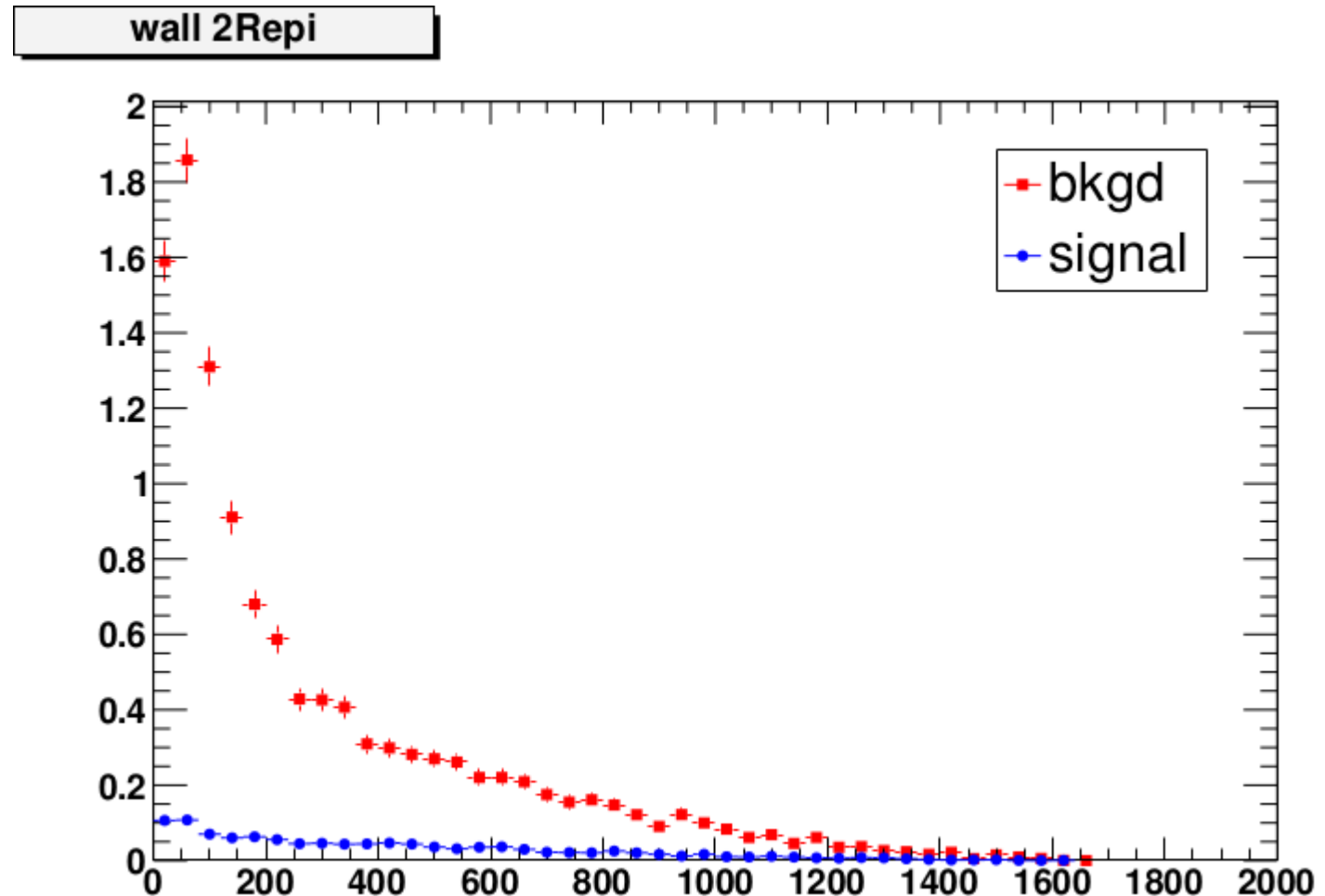
d2se

- Cut at 200 cm improves FOM from 0.53 to 0.59 in 2Repi1de sample
 - FCFV (no wall), 2ring, epi-like, and 1 decay e cuts identical
- No d2se cut:
 - signal: 1.57
 - bkgd: 7.28
- With d2se cut:
 - signal: 1.55
 - bkgd: 5.32



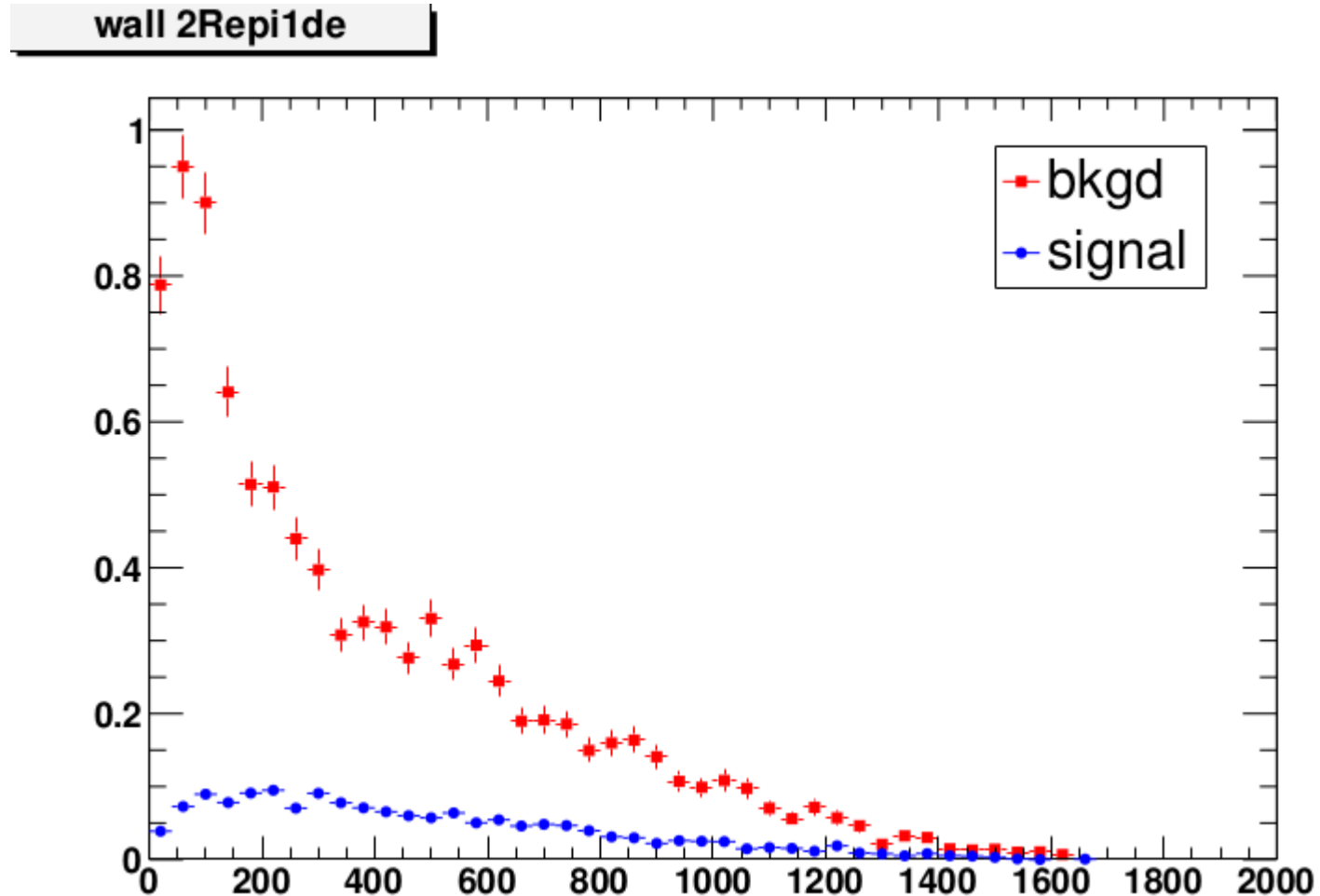
Wall

- FOM not accurate representation of cut performance
 - would need to account for Erec
 - systematics analysis?
 - Took a look at TN318 – do what Andy did, or don't focus on this for now?



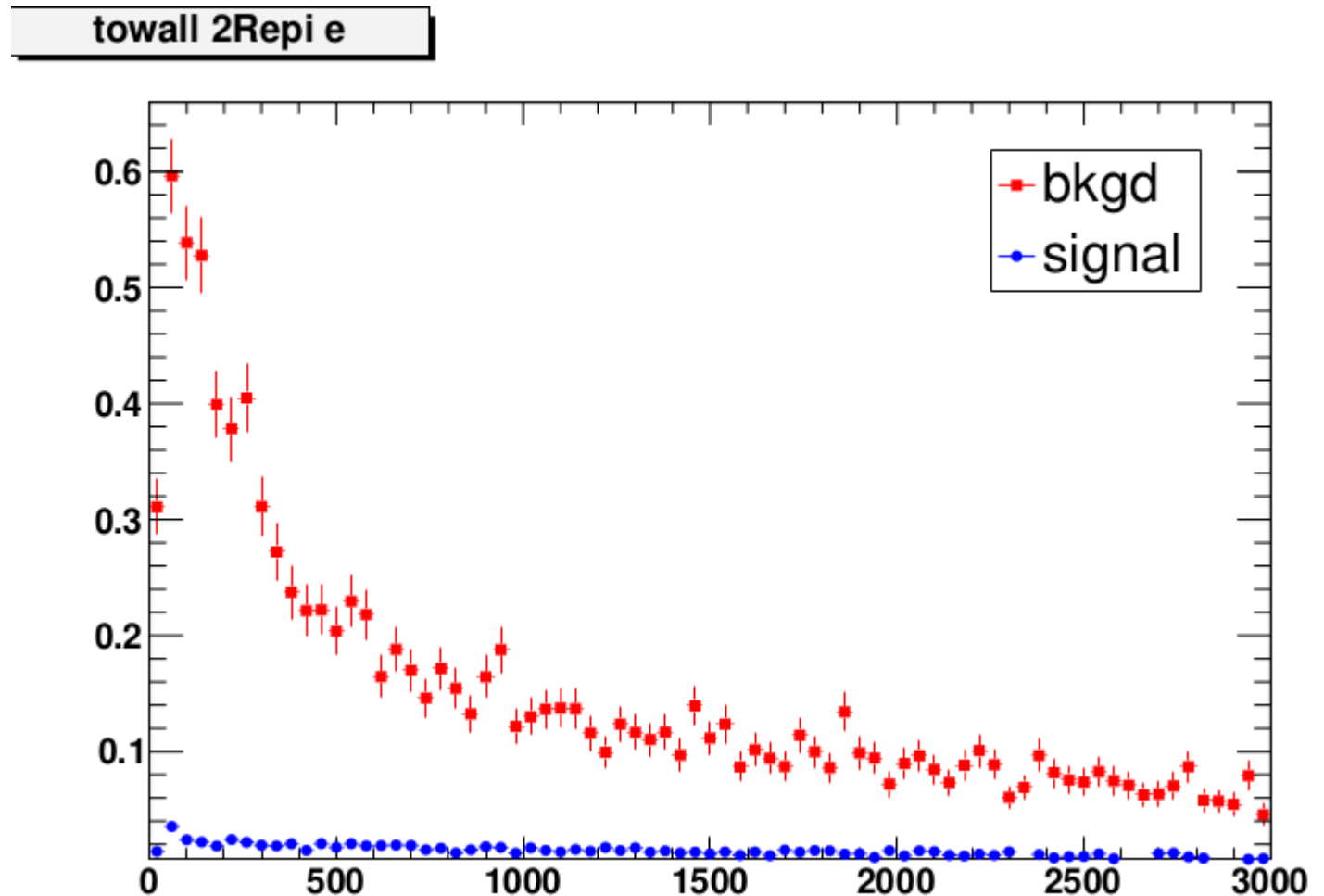
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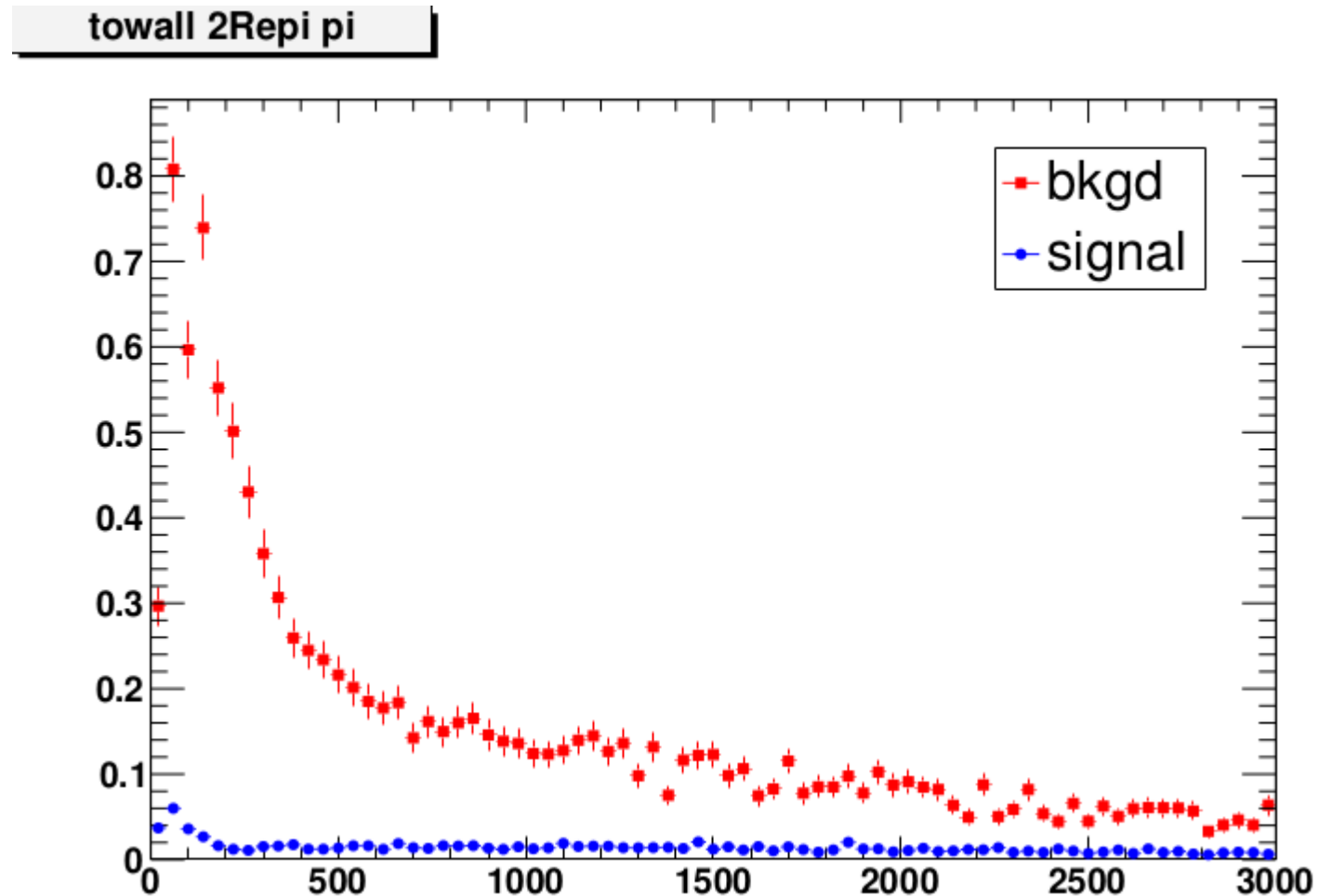
Towall

- Similar issue regarding FOM as with wall



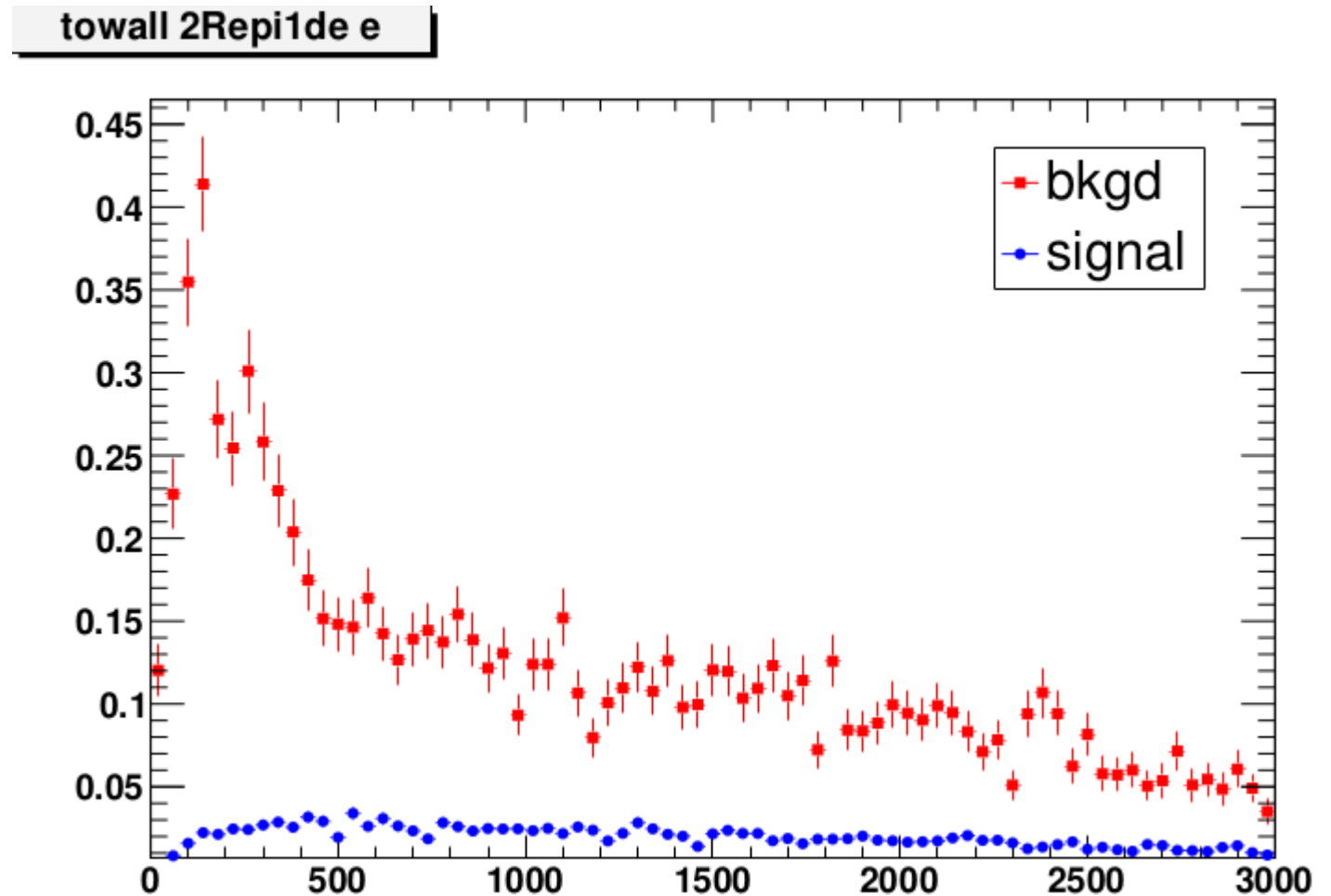
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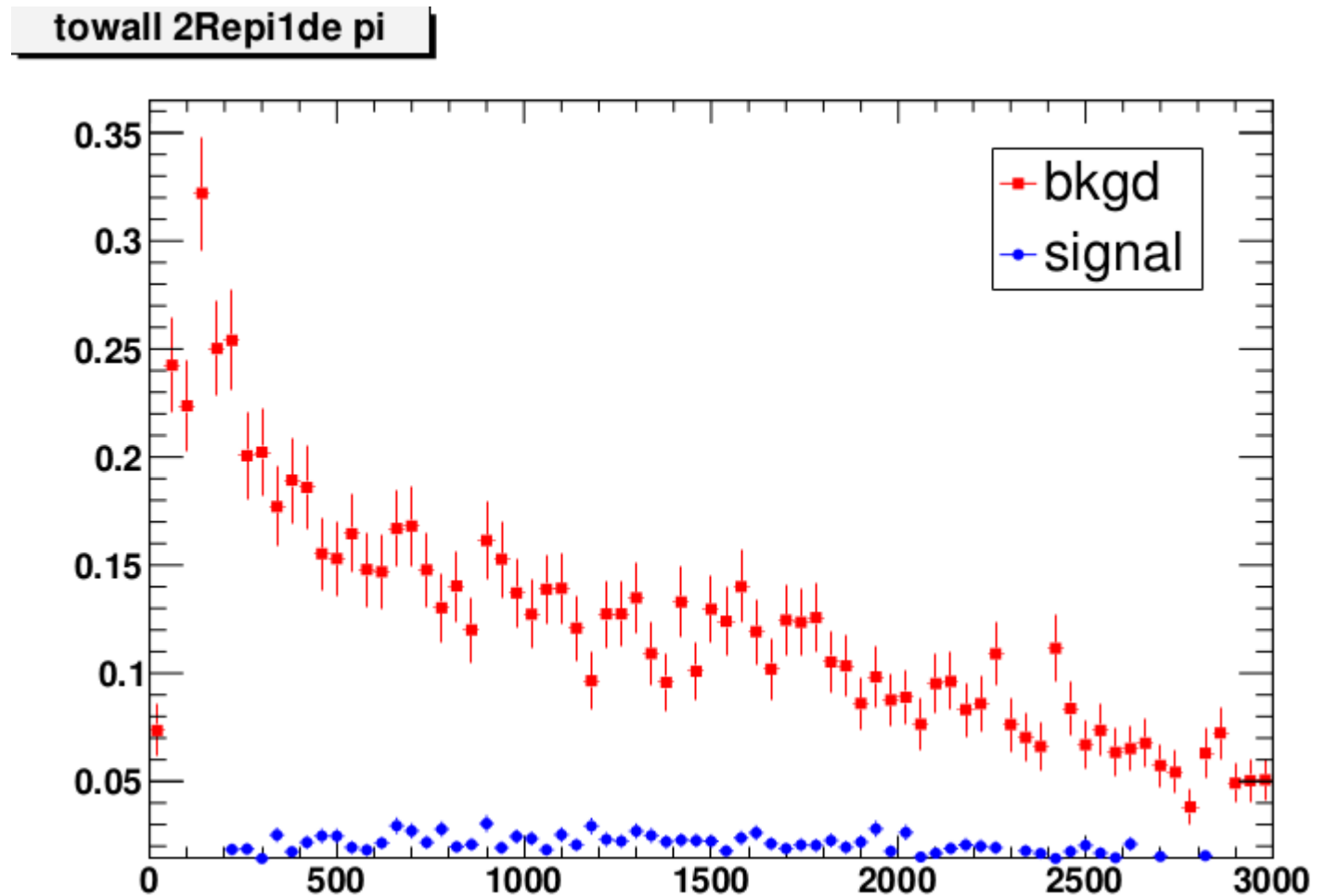
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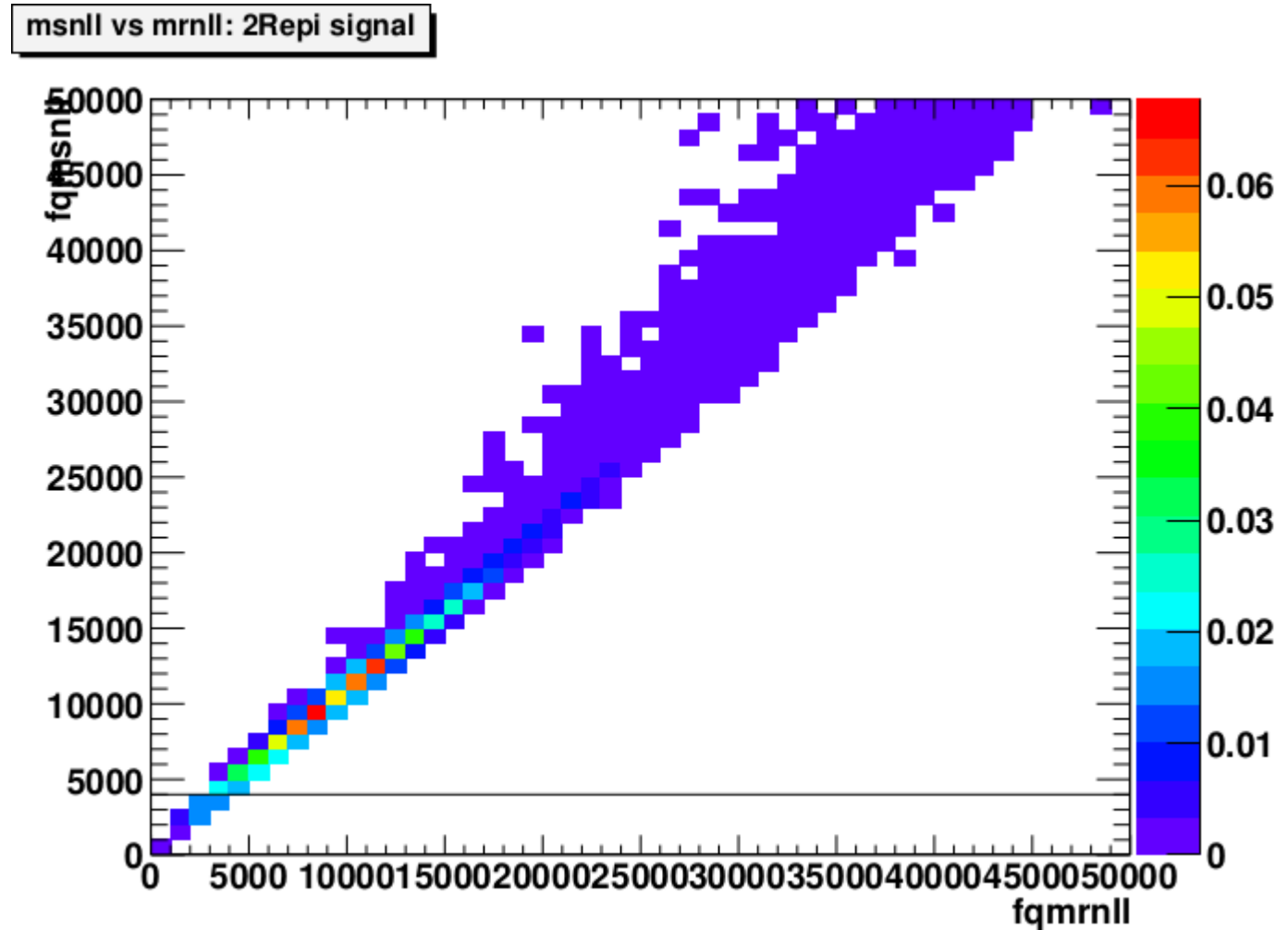
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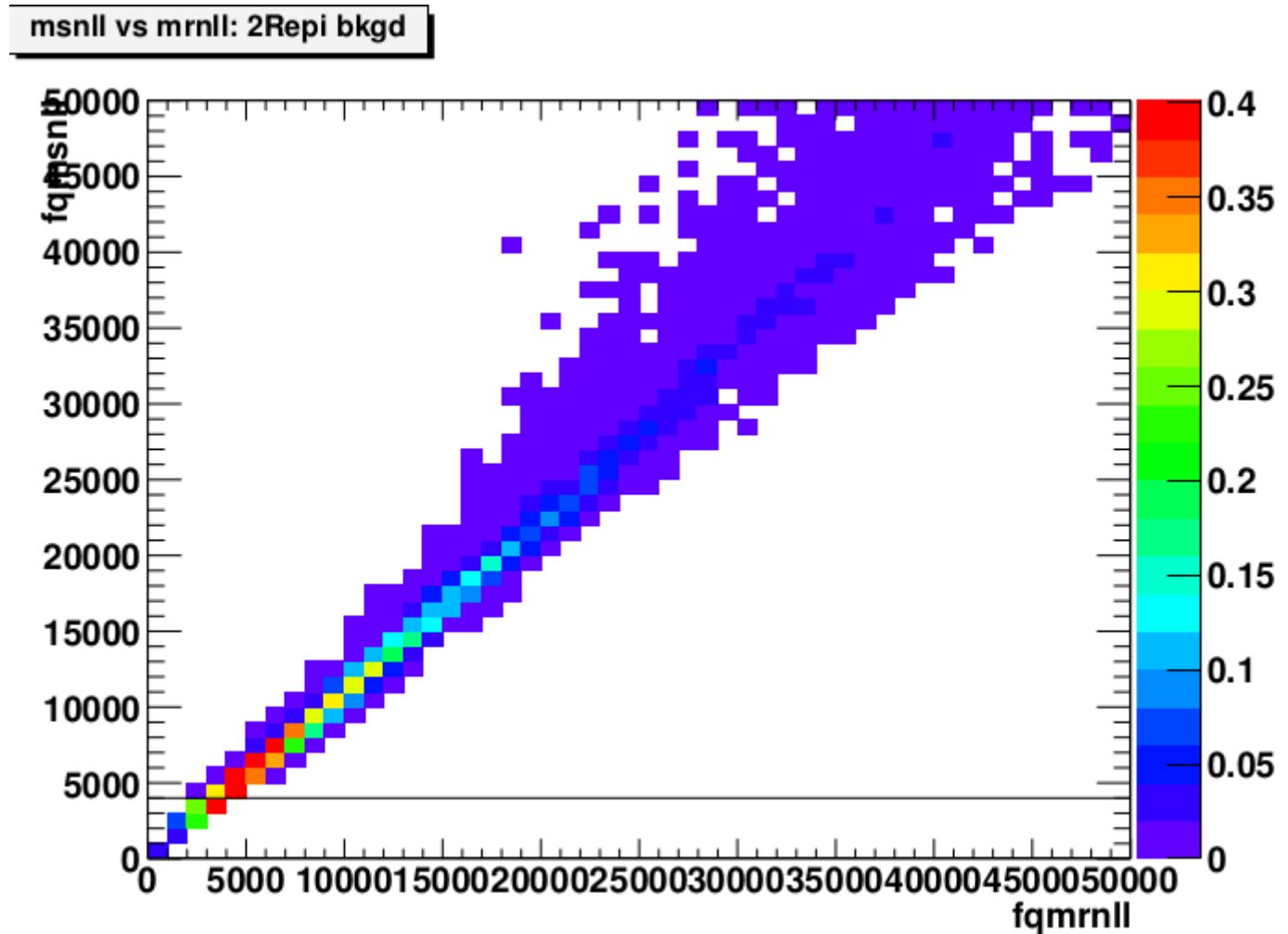
msnl vs mrnl (i.e. 2Repi nl)

- strongly correlated
 - looser correlation with bkgd
 - maybe just because of more statistics?
- still experimenting with this to see if improvement possible
 - marginal improvement (<0.01) in FOM achieved



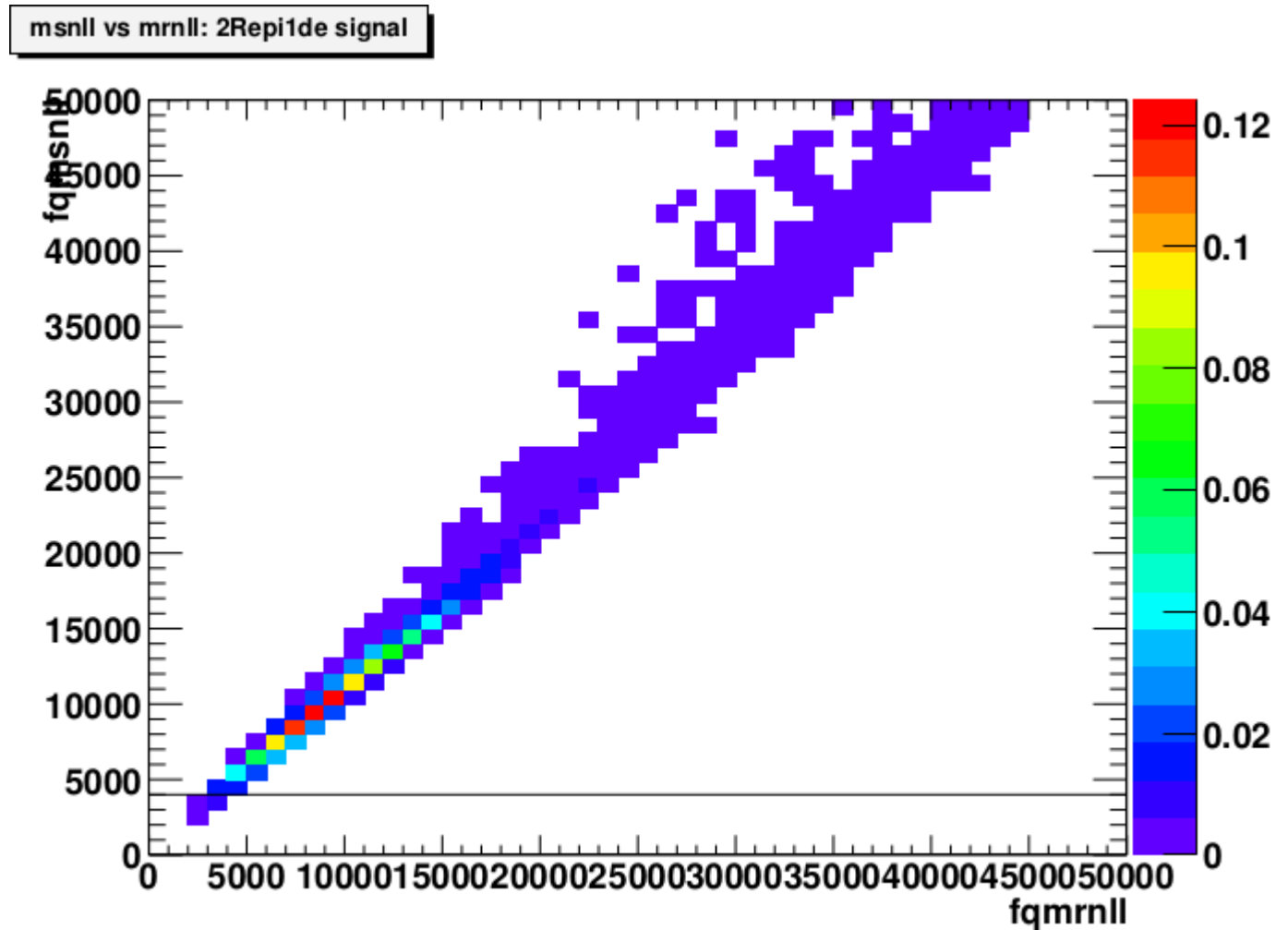
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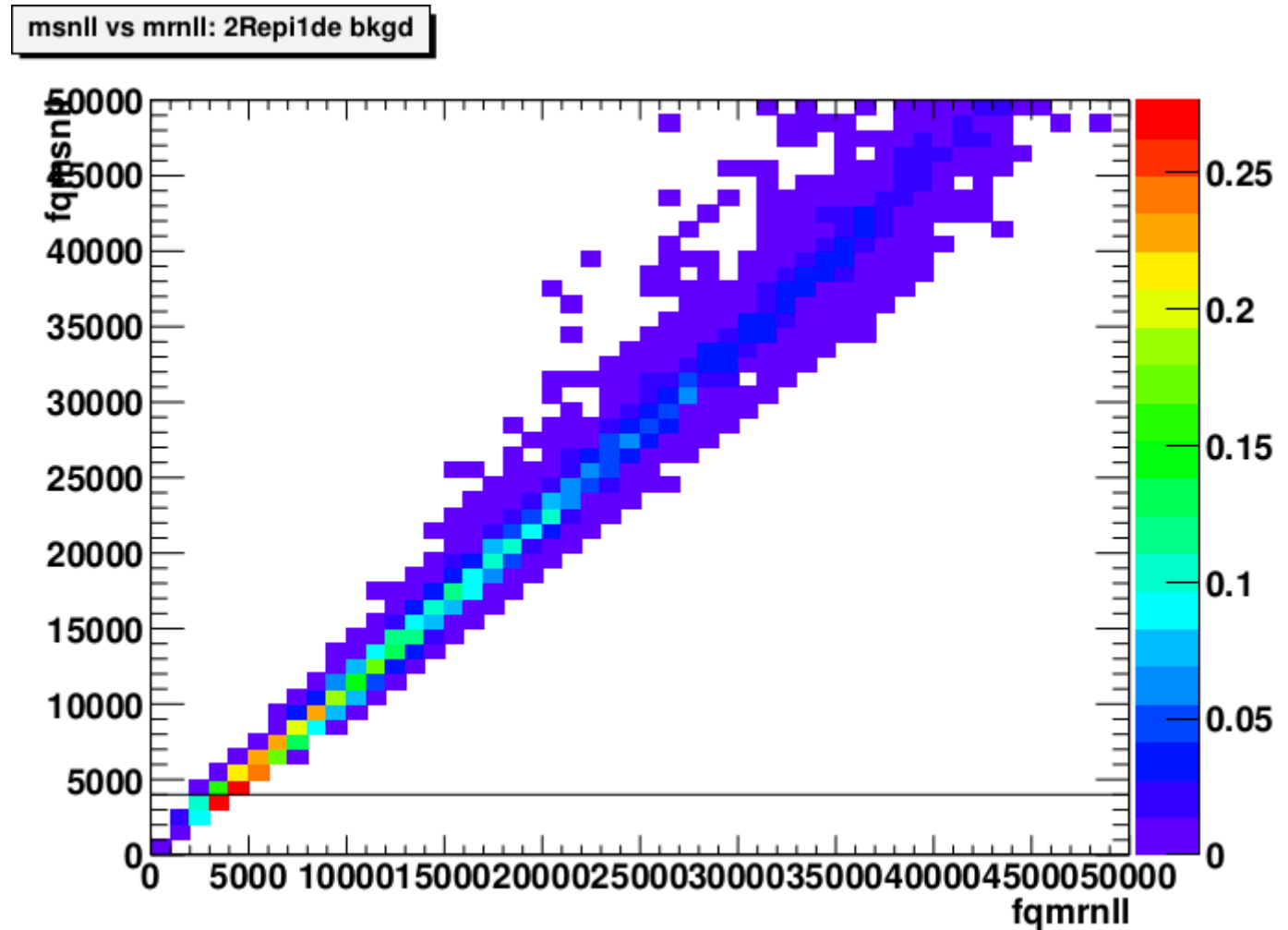
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Thoughts on π^0 rejection

- No π^0 fit done in fiTQun multi-ring fits
- Tried comparing mrnll- π^0 nll vs π^0 mass, but doesn't look promising
- Not sure how to best approach this

Thoughts on other possible cuts

- Angle between e and pi rings vs some momentum/energy
- Momentum difference between e and pi rings