

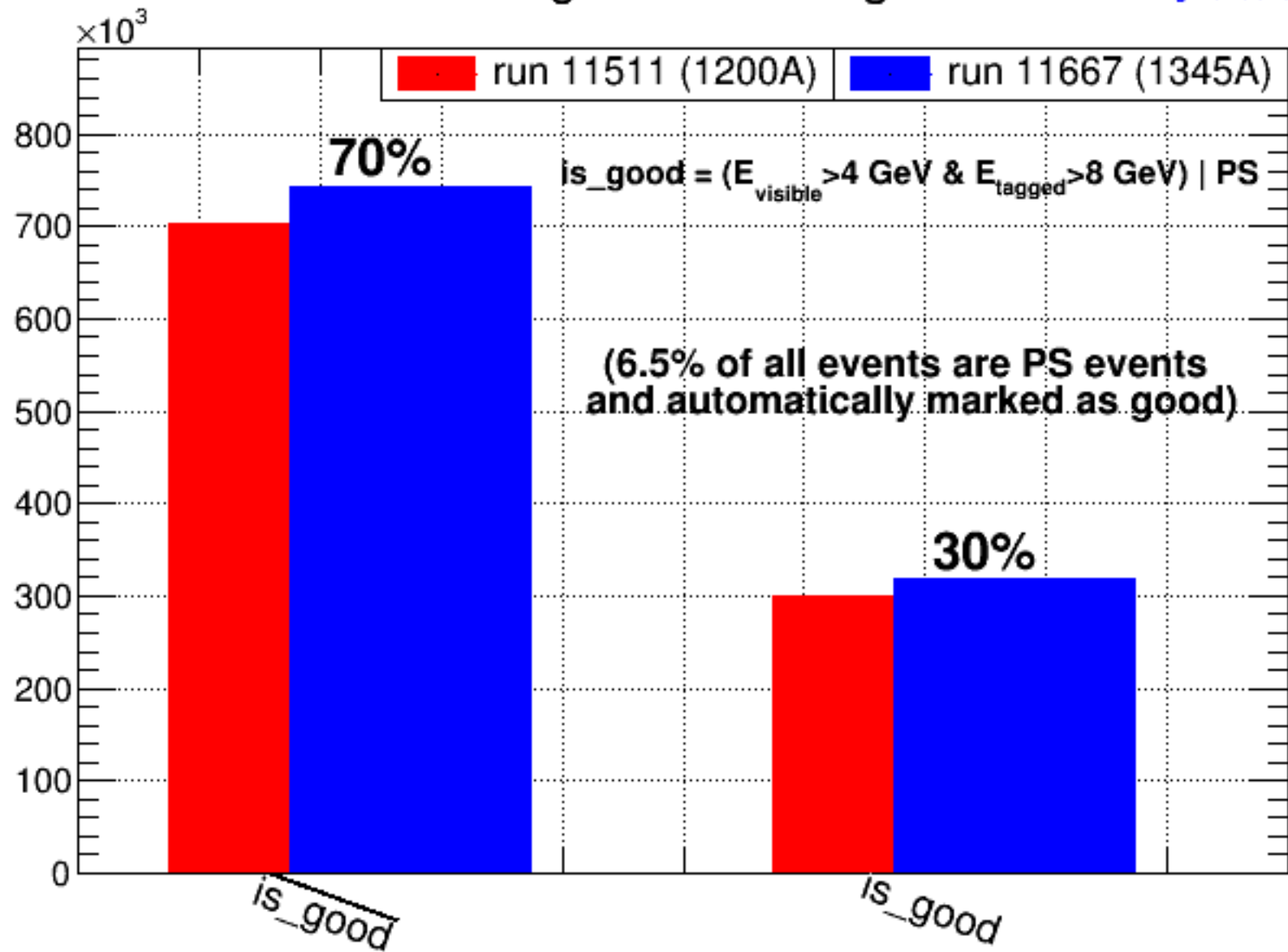
L3: Classifying good events

David Lawrence JLab

July 8, 2015

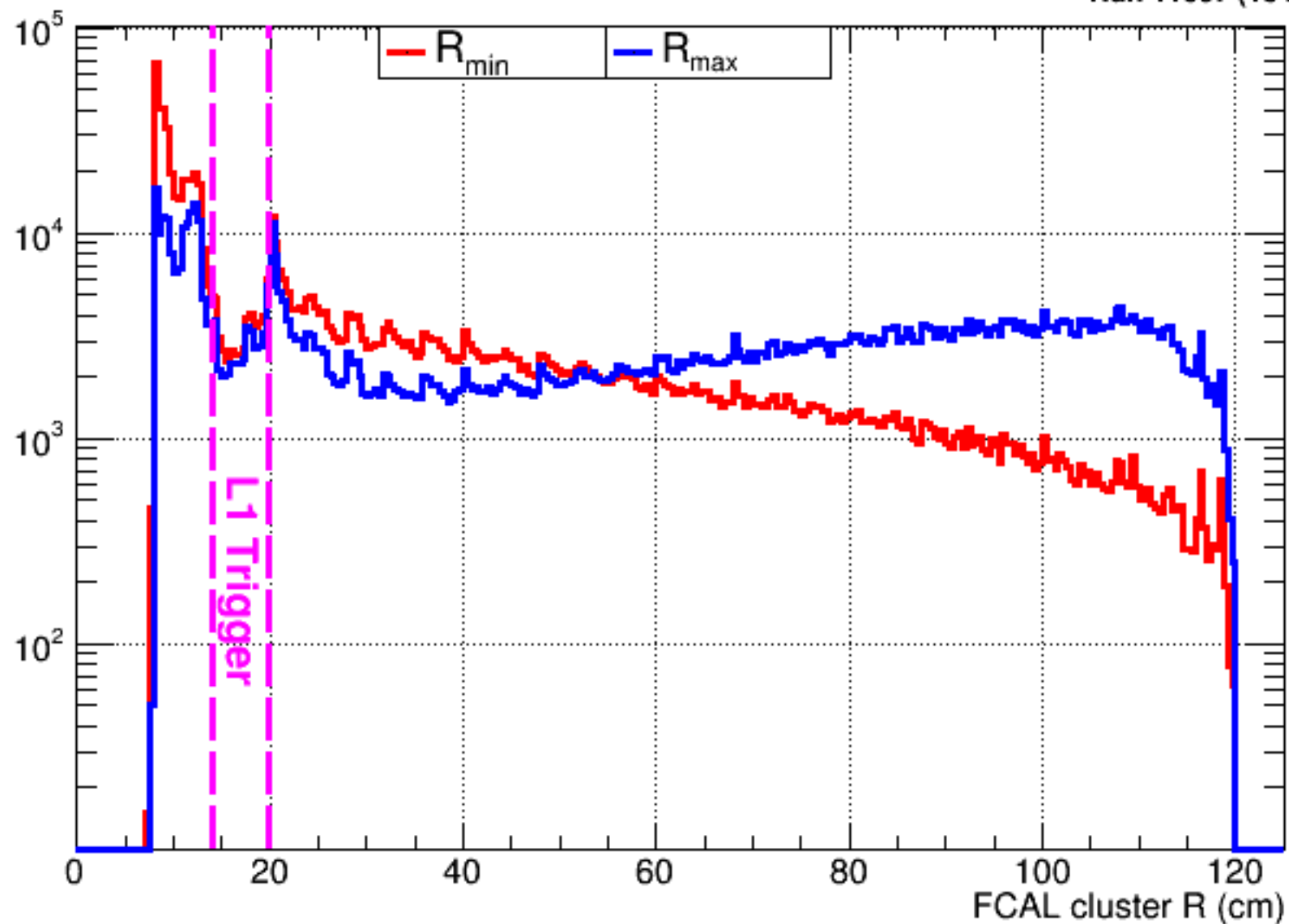
L3 good event flag

July 7, 2016 DL
git revision #7118b85

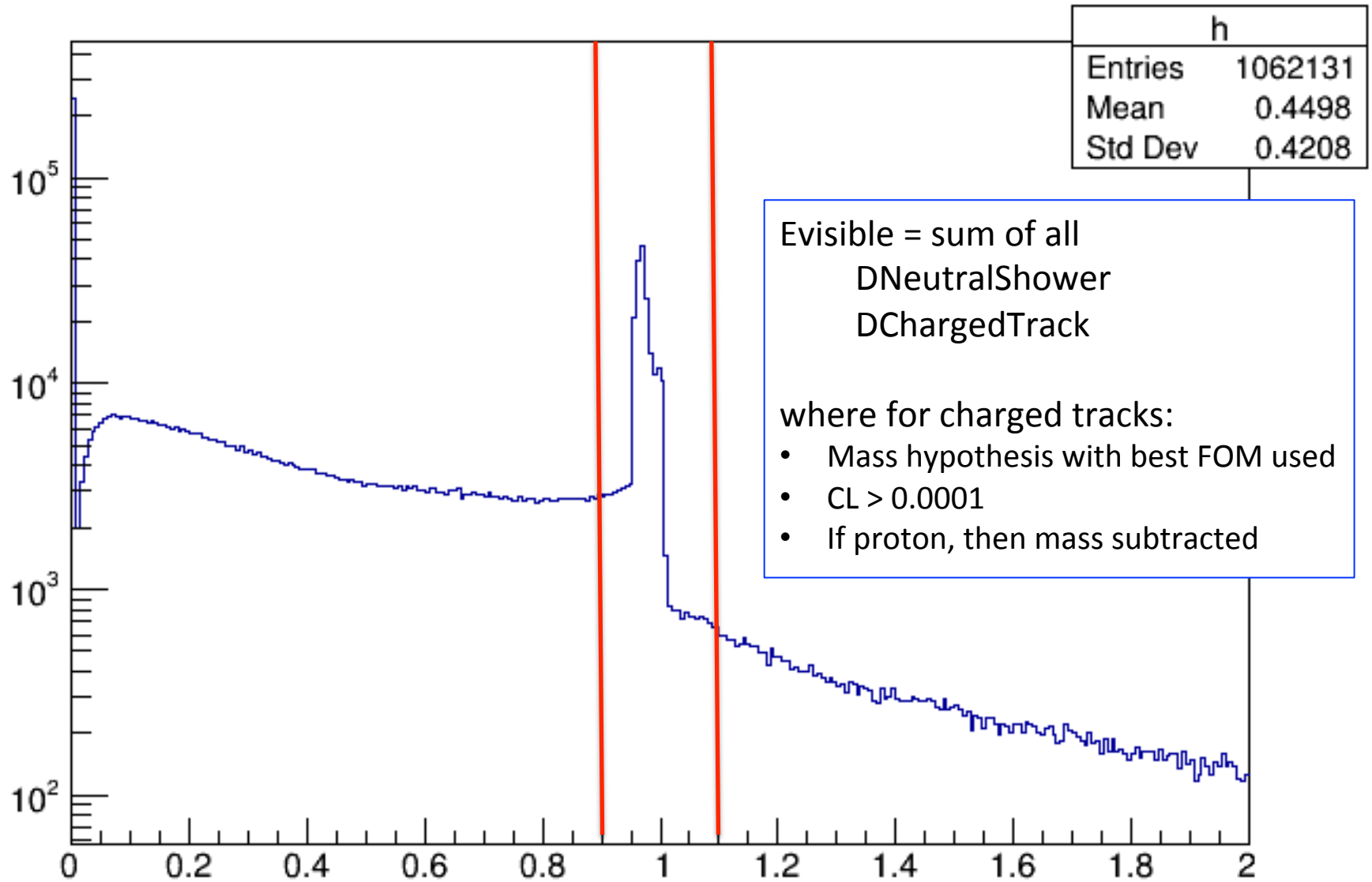


FCAL cluster R

July 7, 2016 DL
git revision #7118b85
Run 11667 (1345A)

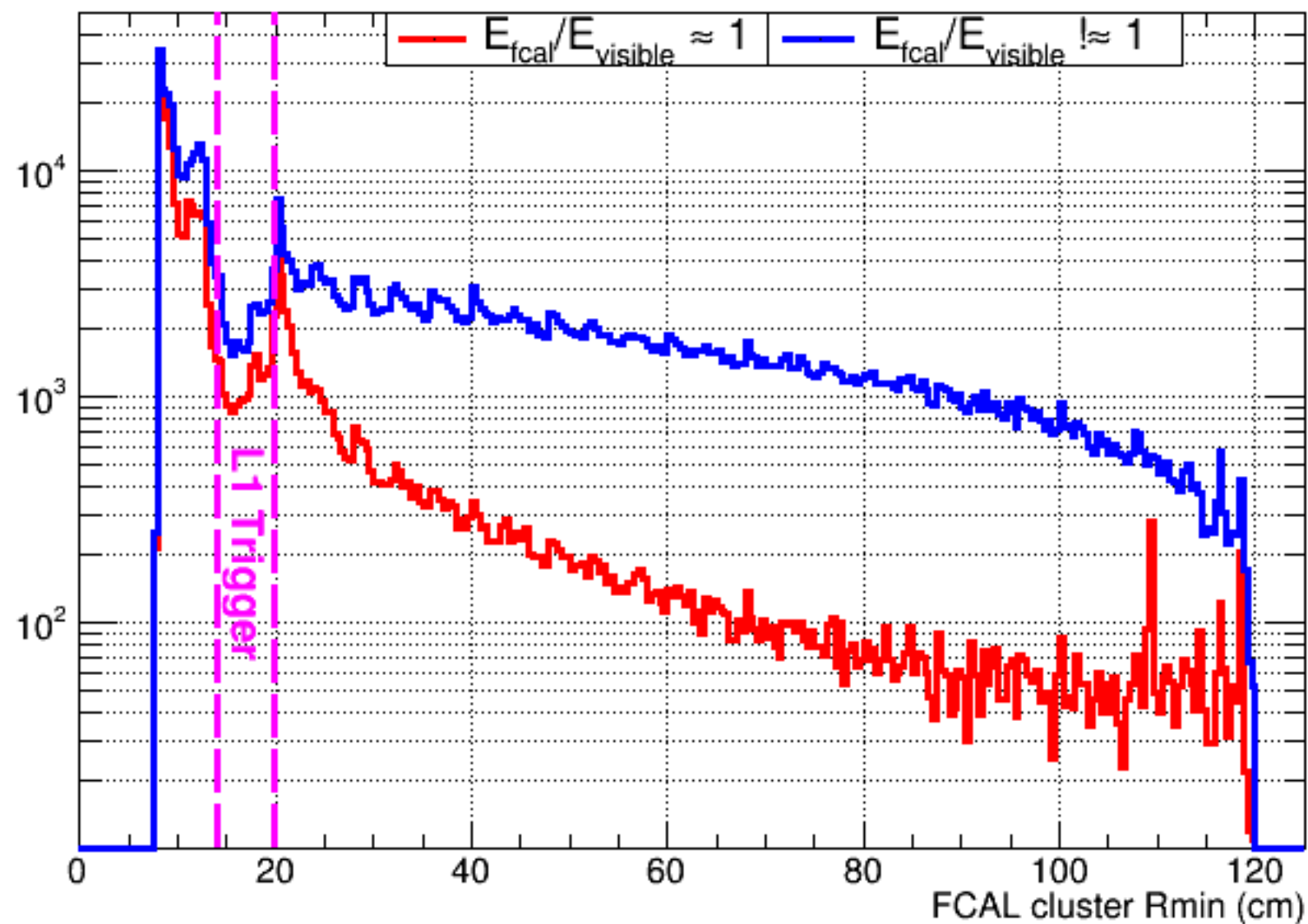


Efcals_clusters/Evisible

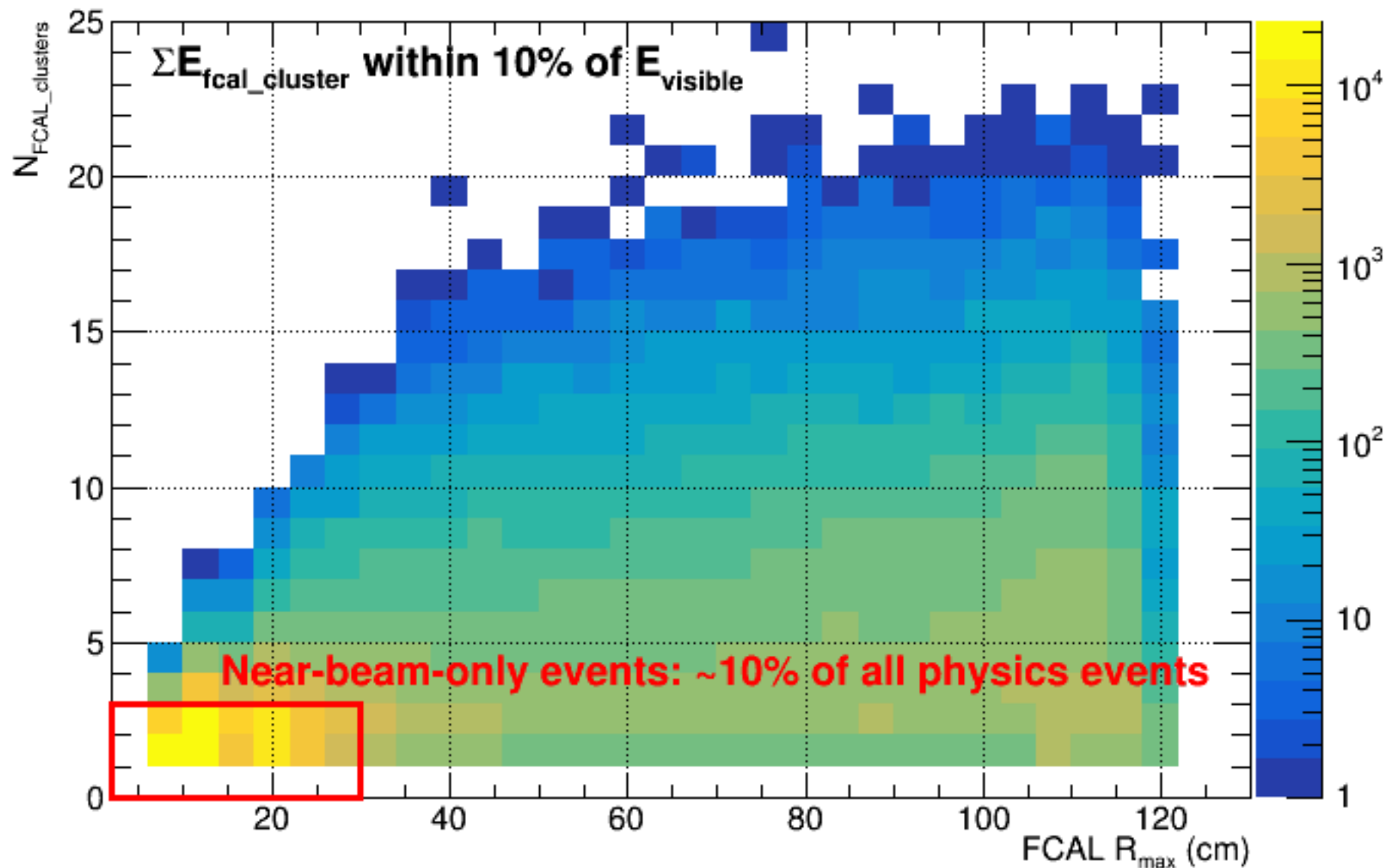


FCAL cluster Rmin

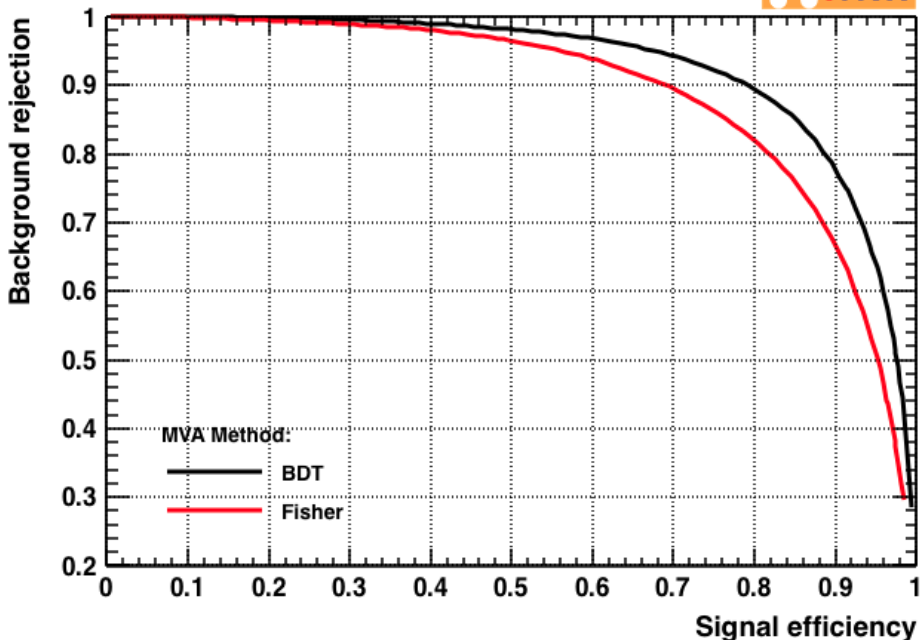
July 7, 2016 DL
git revision #7118b85
Run 11667 (1345A)



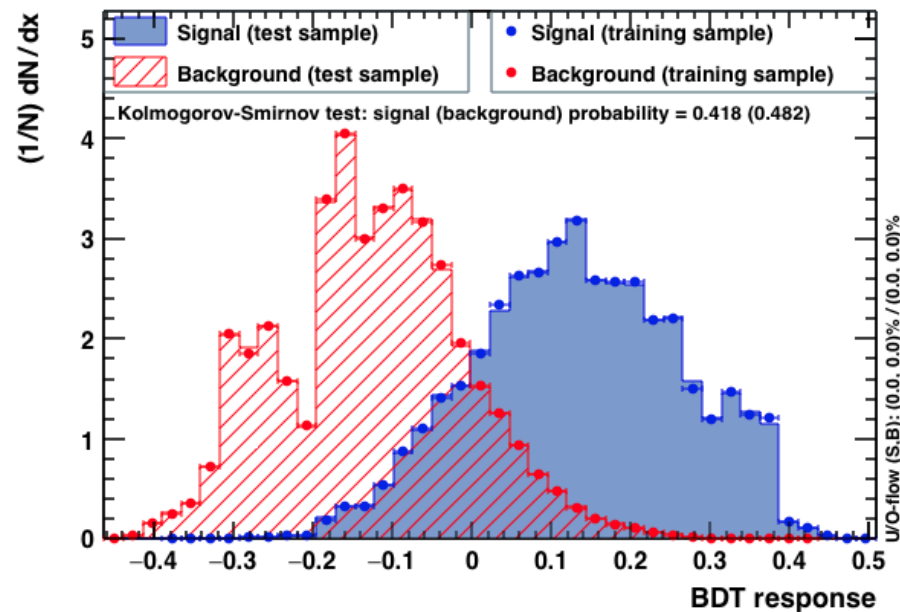
FCAL N_{clusters} vs. R_{max}



Background rejection versus Signal efficiency



TMVA overtraining check for classifier: BDT



```

--- BDT      : Ranking result (top variable is best ranked)
--- BDT      : -----
--- BDT      : Rank : Variable      : Variable Importance
--- BDT      : -----
--- BDT      : 1 : Efcals_clusters : 1.917e-01
--- BDT      : 2 : Ntrack_candidates : 1.710e-01
--- BDT      : 3 : Nfcals_clusters : 1.279e-01
--- BDT      : 4 : Nbcals_points : 1.258e-01
--- BDT      : 5 : Npshits : 8.291e-02
--- BDT      : 6 : Ebcals_points : 7.186e-02
--- BDT      : 7 : Ebcals_clusters : 6.445e-02
--- BDT      : 8 : Ntof : 6.424e-02
--- BDT      : 9 : Nstart_counter : 5.138e-02
--- BDT      : 10 : Nbcals_clusters : 4.873e-02
--- BDT      : 11 : Ptot_candidates : 0.000e+00
--- BDT      : 12 : Npschits : 0.000e+00

```

Next steps

- Add more variables to MVA analysis
 - Higher-level (e.g. fully reconstructed tracks, showers)
 - Lower-level (e.g. CDC/FDC hits, BCAL/FCAL hits)
- Test and optimize for signal efficiency/
background rejection
- Identify highest ranked variables and group
based on algorithm cost
- Repeat for simulated data set