

Status of UW classification and PSF fits

(A quick summary – details at a future meeting)

Ingredients

- allgamma from HEAD1.594
 - *allGamma-GR-HEAD1.594-merit-TKR-prune-x.root*, $x=1,2$
 - Used for “goodCal” and “gamma” training
- backgndpdravg from HEAD 1.594
 - *tg1_merit0.root*, *tg1_merit1.root*
 - used for “gamma” training
- UW all_gamma from HEAD1.612
 - Used to train “vertex” and “goodPsf” trees.
- Packages *classifier* and *GlastClassify* : perform the training, save the resulting decision trees.
 - Current GR HEAD tag has all the above trees.
- Package *merit* : apply above trees to define the CT tuple variables: *CTgoodCal*, *CTvertex*, *CTgoodPsf*, *CTgamma*
 - special application *run_classification* creates or replaces these variables in an existing ROOT file

PSF fits: HEAD1.612

- Cuts:

```
goodCal="CalTotRLn>4&&CalEnergyRaw>5.0&& CTgoodCal>0.2";  
TCut zdir_cut("Tkr1ZDir<-0.2");  
TCut goodPSF("CTgoodPsf>0.2");  
TCut goodGamma("CTgamma>0.2");  
m_goodEvent=goodCal && zdir_cut && goodPSF && goodGamma;
```

- Fit to Student's T distribution to characterize the radial PSF distribution, assuming azimuthal symmetry. (See my LATDOC).

- 6 bins in energy, 8 in cos theta.
- Scale direrror by the Atwood function before fitting, see the LATDOC.
- Combine the cos theta bins out to 66 degrees for next plot

- Fit results:

Title	count	67%	95%	sigma	gamma
32 MeV, 0-66 degrees	1642	0.937	2.27	1.04	2.22
100 MeV, 0-66 degrees	18239	0.919	2.2	0.947	1.99
316 MeV, 0-66 degrees	29108	0.878	2.1	0.907	2
1000 MeV, 0-66 degrees	30449	0.881	2.04	0.838	1.95
3162 MeV, 0-66 degrees	28028	0.927	2.13	0.871	1.93
10000 MeV, 0-66 degrees	25248	1.01	2.4	0.934	1.74

Plots, 0-66 degrees combined

Plots from d:\Users\umett\IRF\IRF\12\cmt\...\IRF\12\data612\irf_front.root Tue Aug 02 20:17:59 2005

