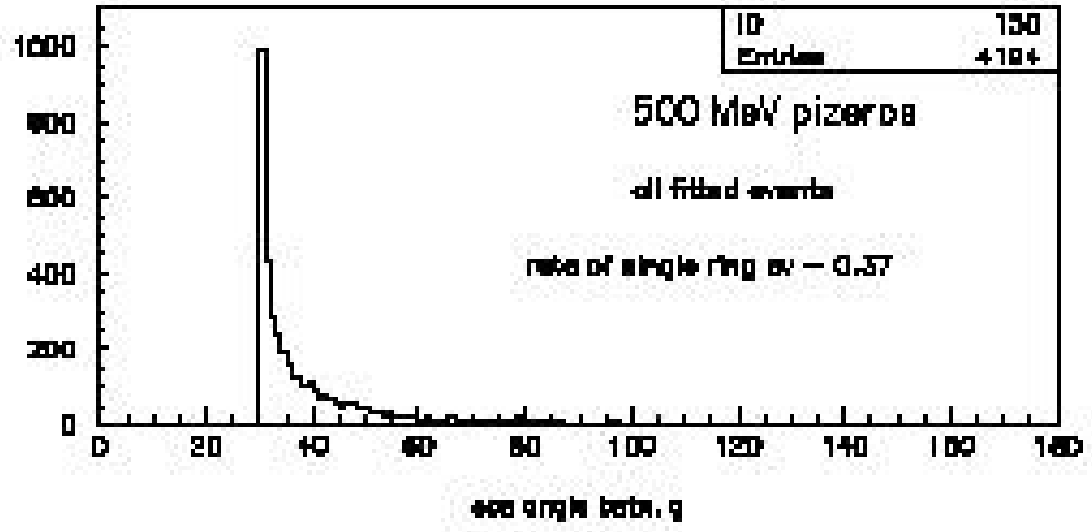
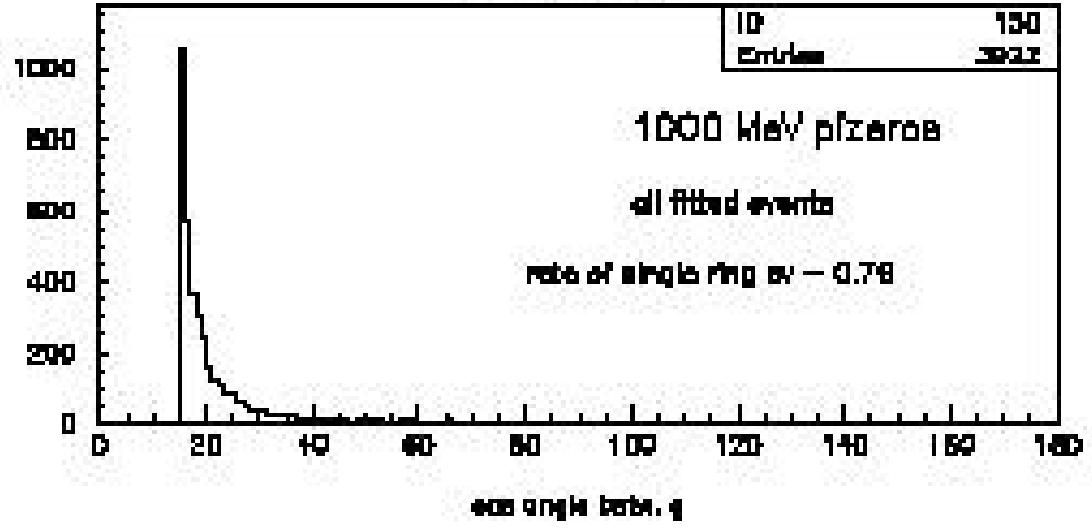
Electrons vs π^0 in water Cherenkov

- Try to see if pi zeros with 2 overlapping γ can be separated from electrons
- Polfit finds weak second rings but at higher energies its efficiency drops
- 2 overlapping γ in principle shower differently than one electron of the same energy
- Is the difference large enough?
- Use 1KT simulation and fitting

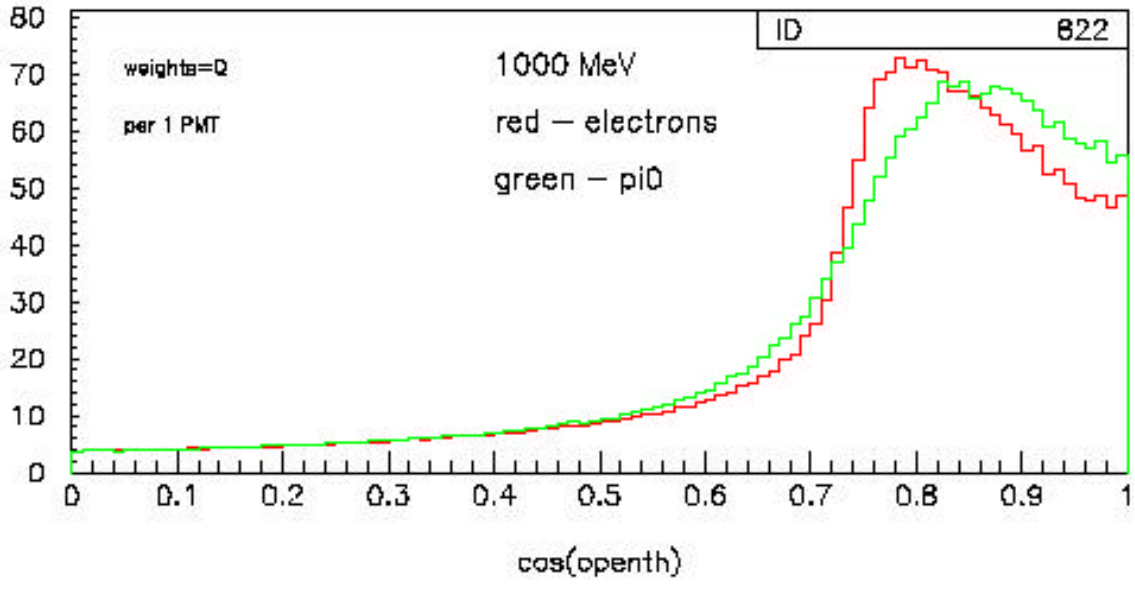
D. Kielczewska
Oct 23, 2003

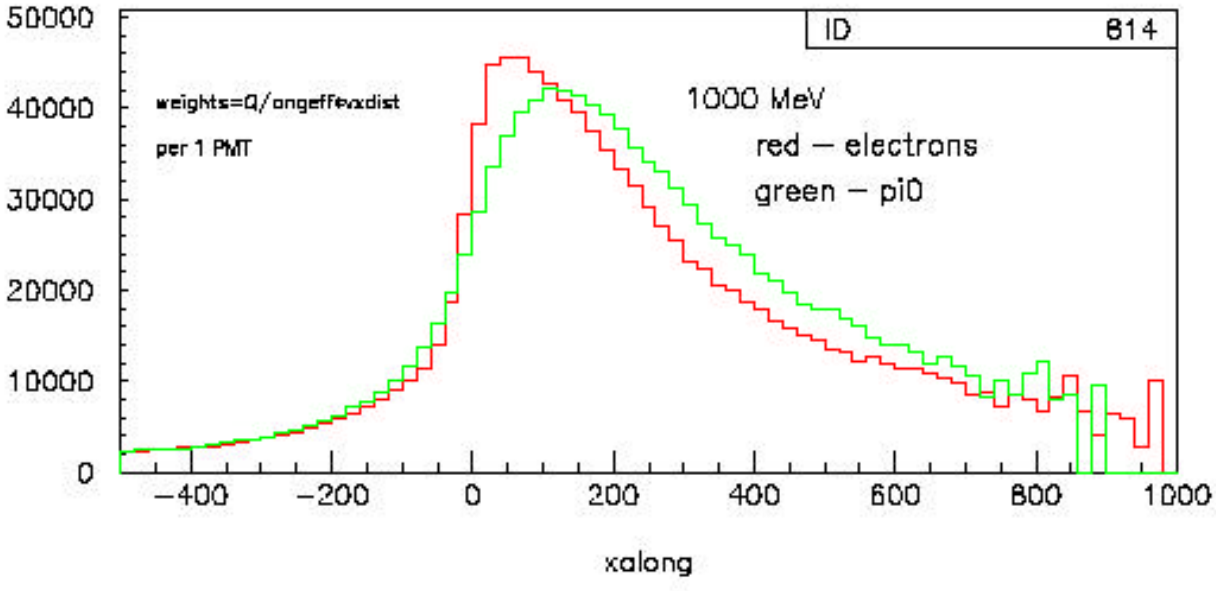
Angles between g's

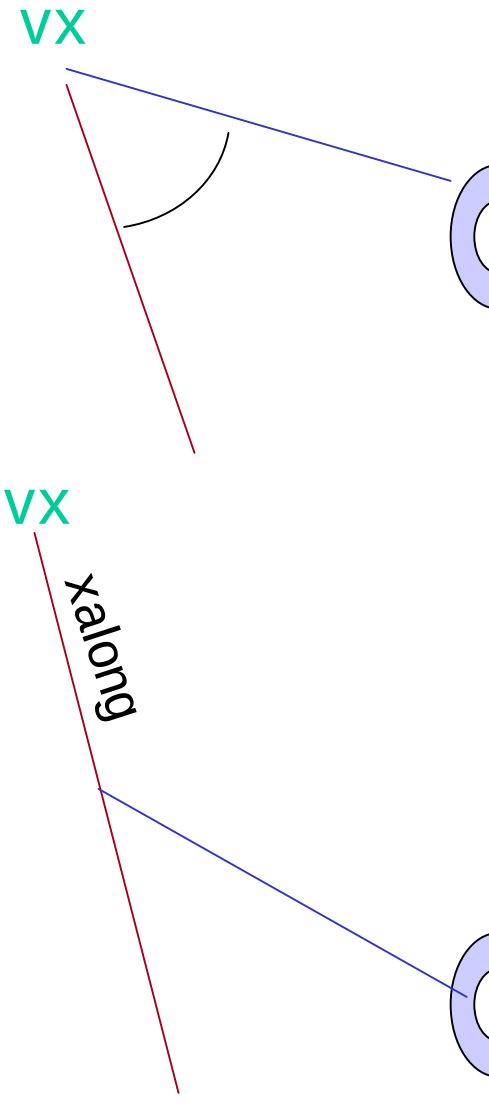




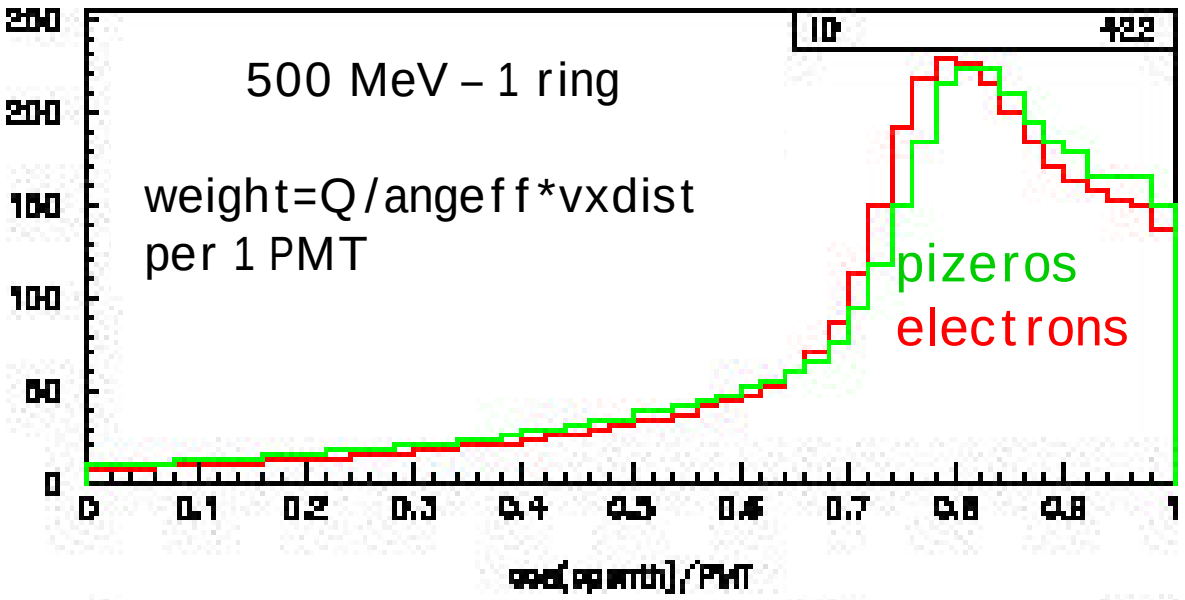
Using true MC vx and directions

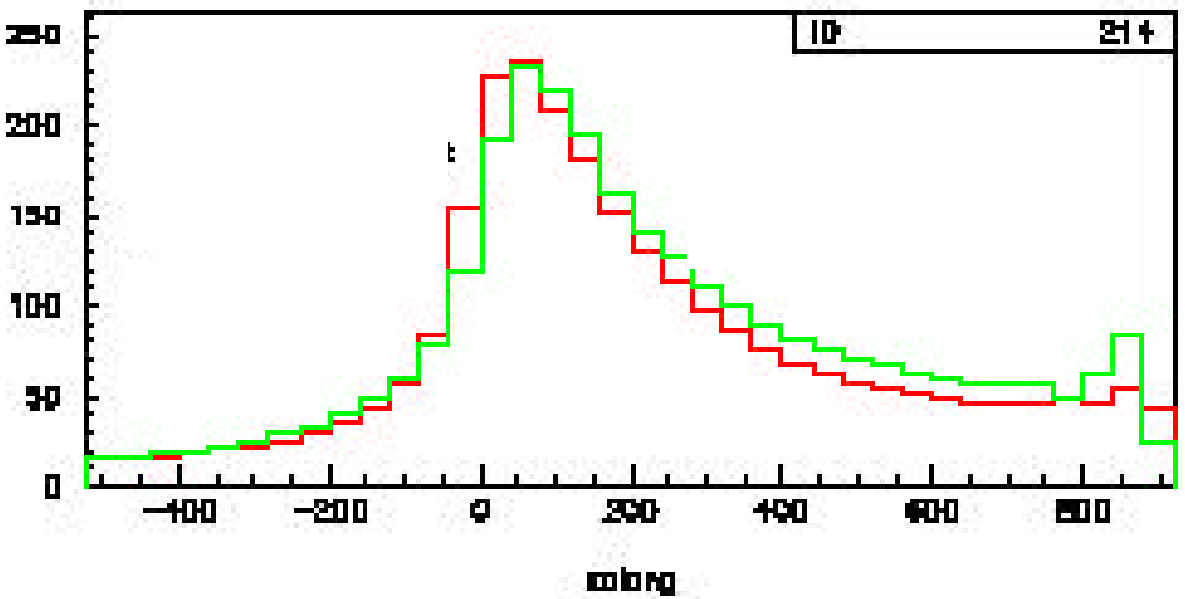




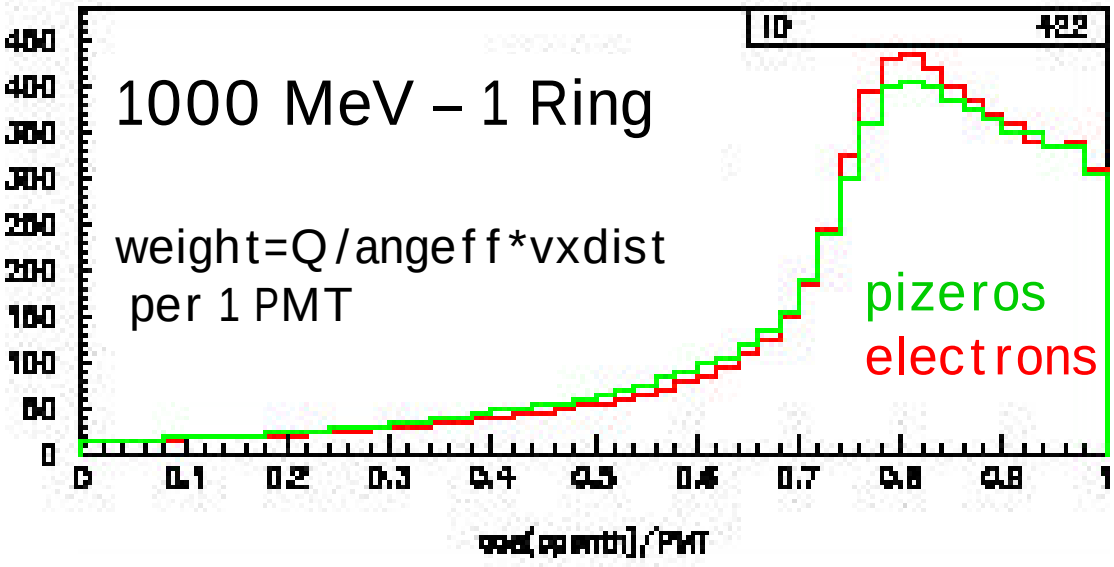


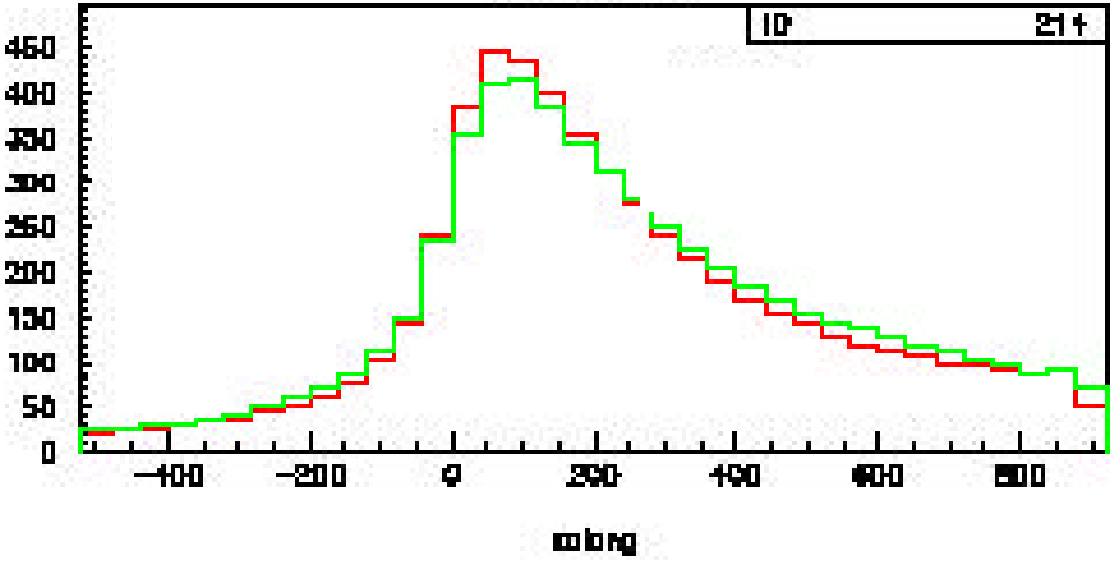
Using fitted vx and directions – 500 MeV

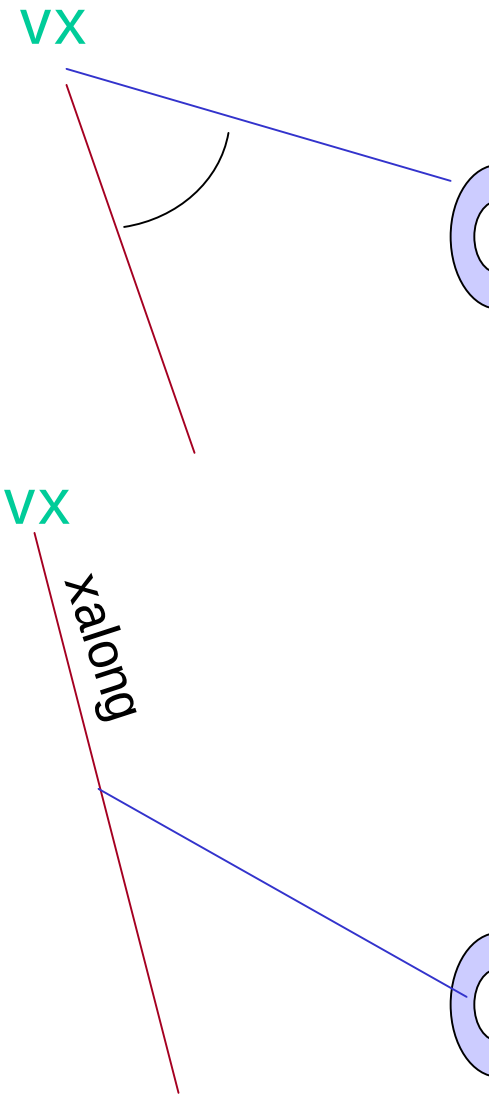




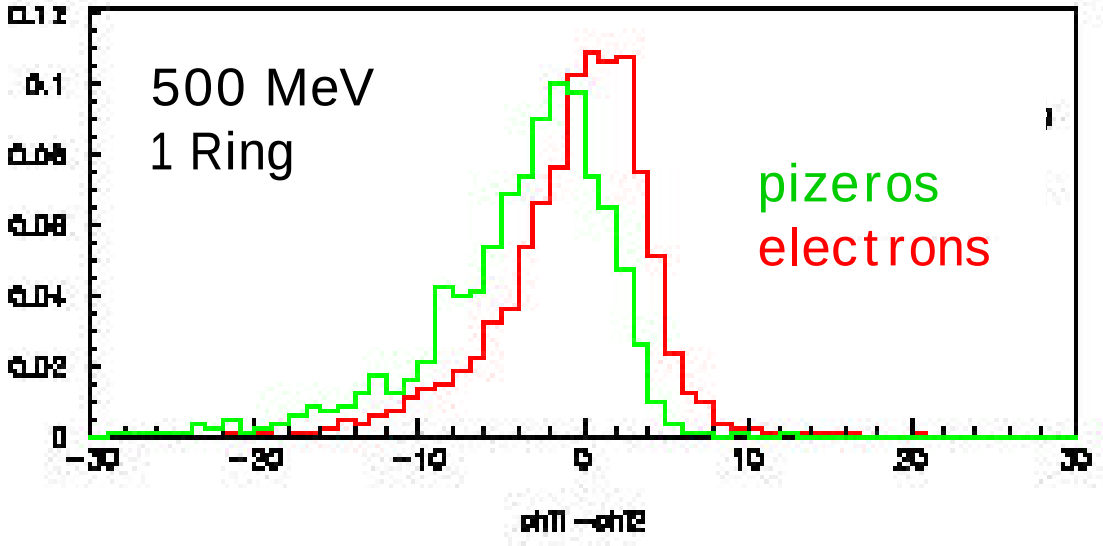
Using fitted vx and directions – 1000MeV

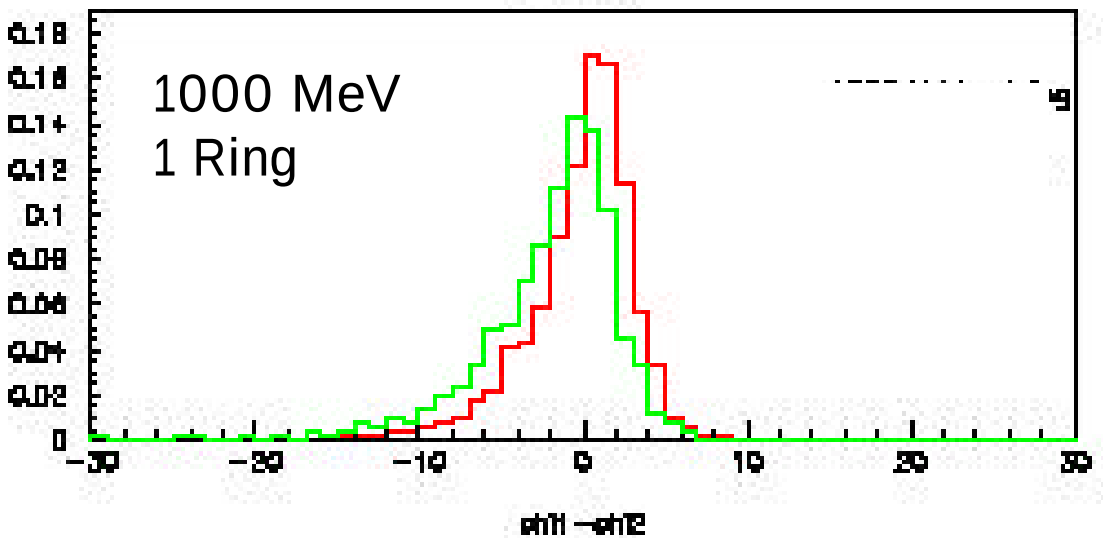




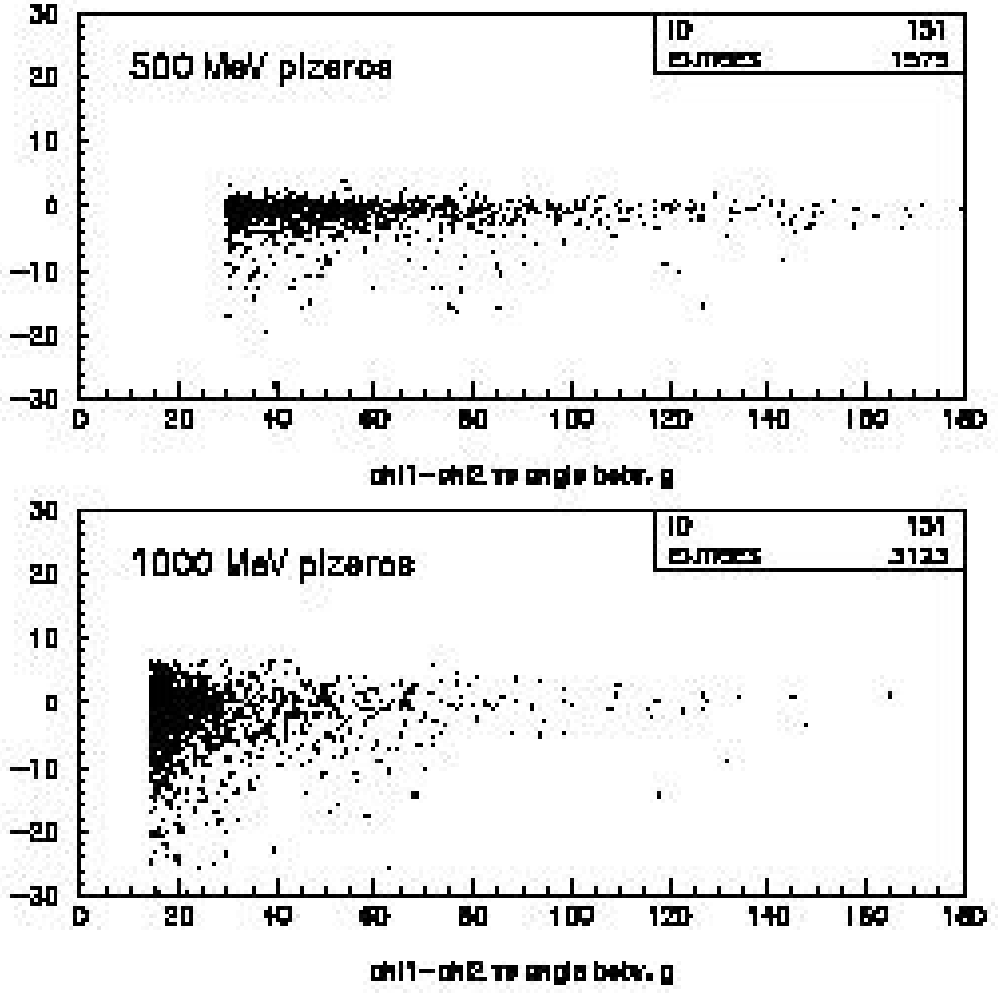


Difference in log likelyhood





Difference in log L vs angles between gammas



Separation or log L difference does not seem to depend on the angle

Conclusions

- A separation is still not very effective at higher energie
- Seems to be more efficient at 1000 MeV than Polfit
- May be useful as an additional discriminant factor
- Will try SK simulations to see if better granularity helps