

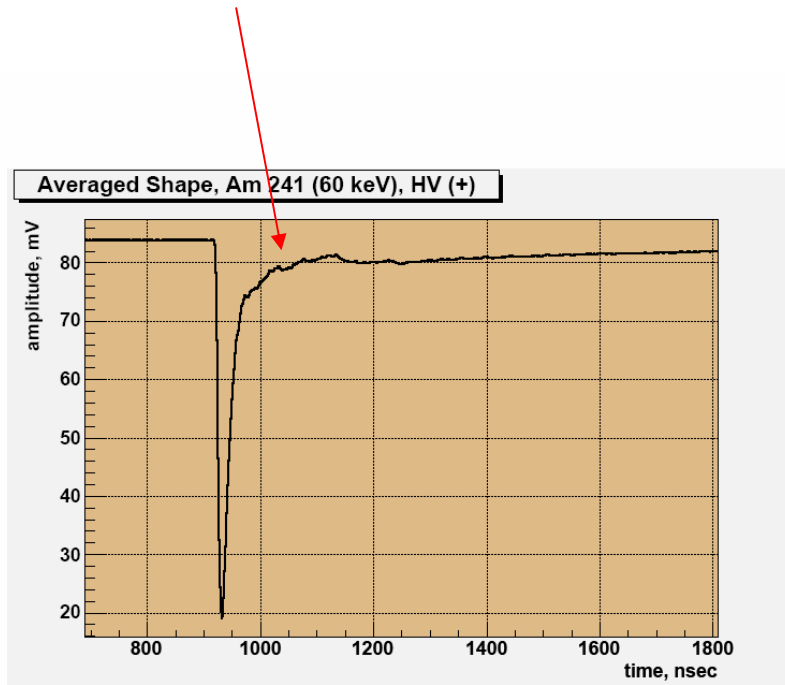
# **LArGe@MPI-K: latest results of LAr scintillation investigation**

**P. Peiffer, S. Schonert, A. Smolnikov, S. Vasiliev**

- 1. pulse shape improvement**
- 2. neutron-gamma discrimination**
- 3. light yield stability**

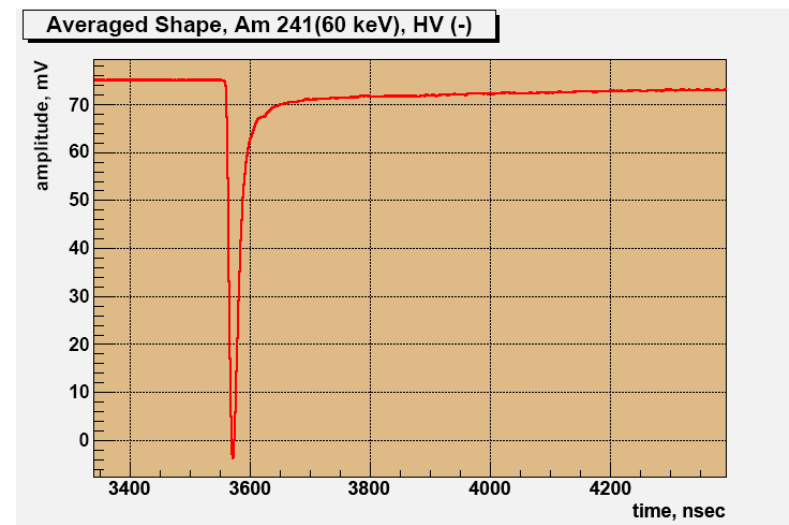
## First step – positive HV

pulse distortion comes from coupling capacitor on anode



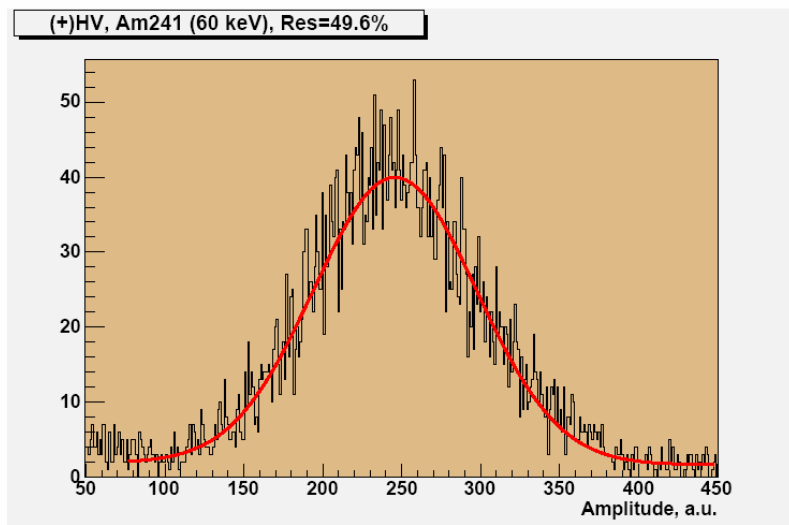
## Second step – negative HV (after modification of divider )

Am241 (internal)-60 keV



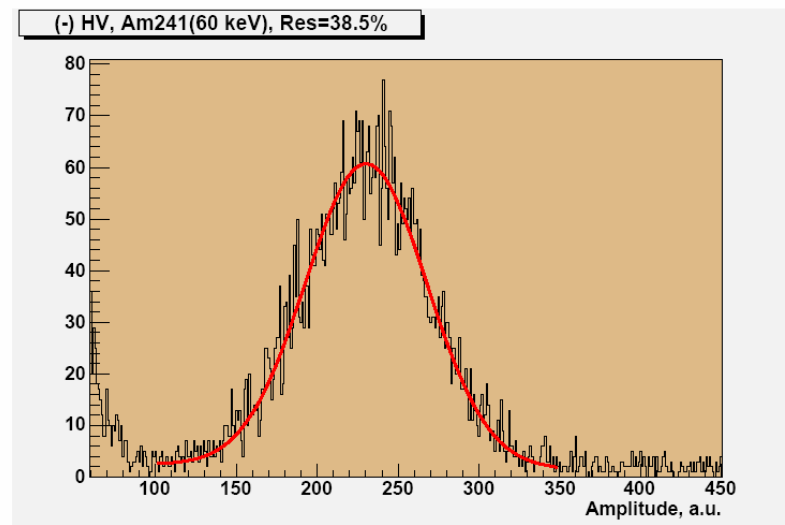
## positive HV

Resolution @ 60 keV=49.6%



## negative HV

Resolution @ 60 keV=38.5%

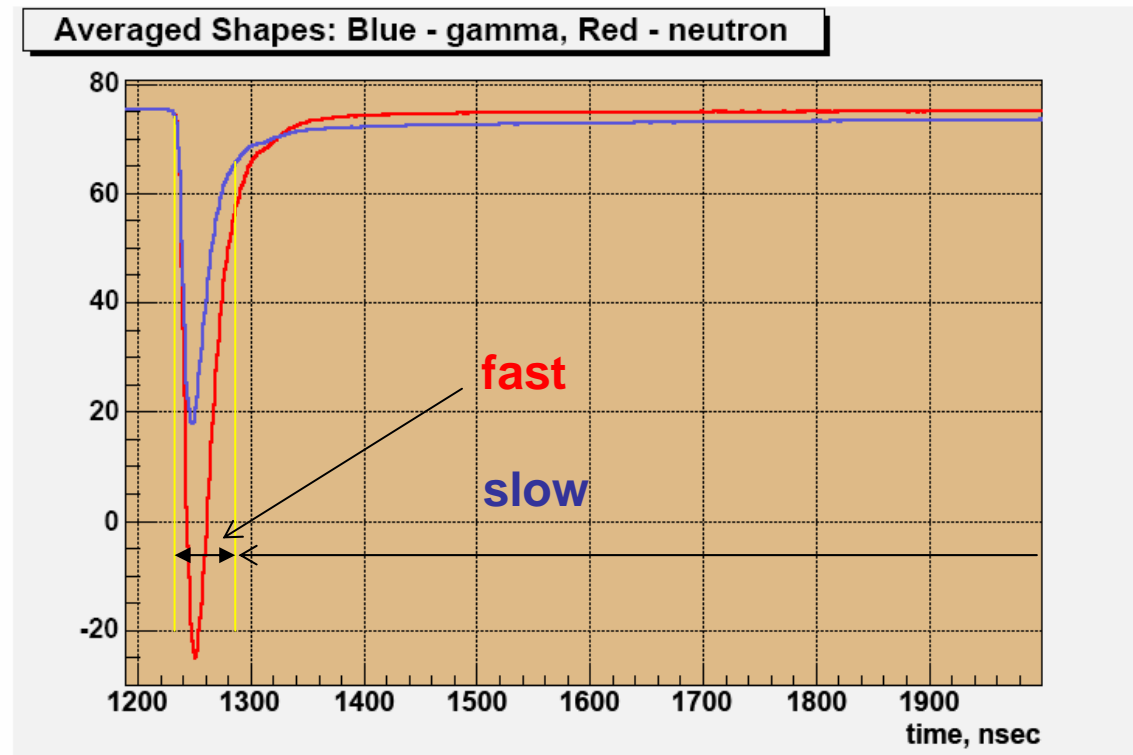


Pulse shapes taken from AmBe measurements:

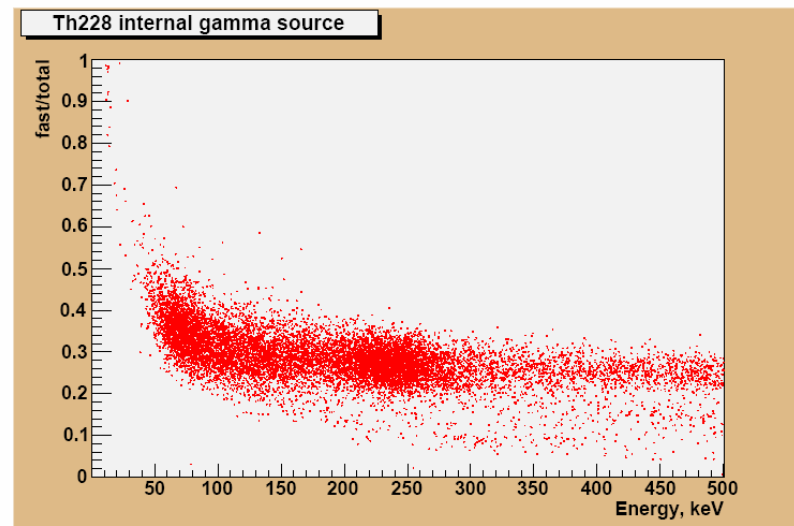
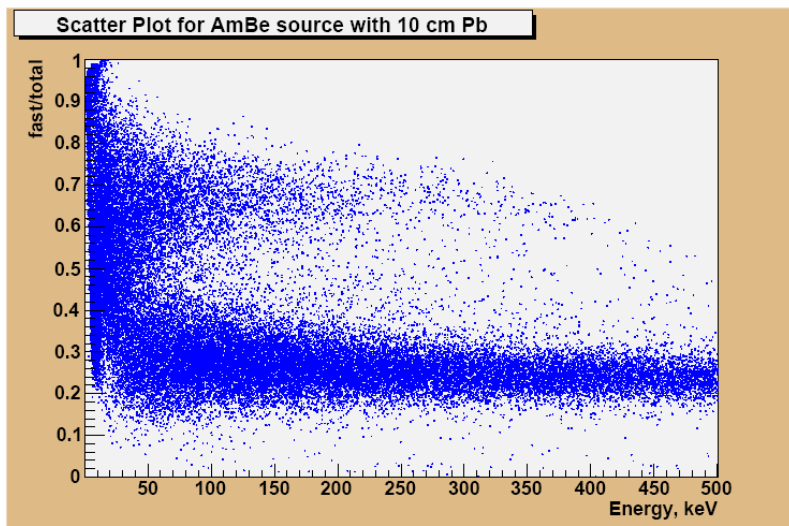
Blue – for electrons (gammas)

Red – for neutrons

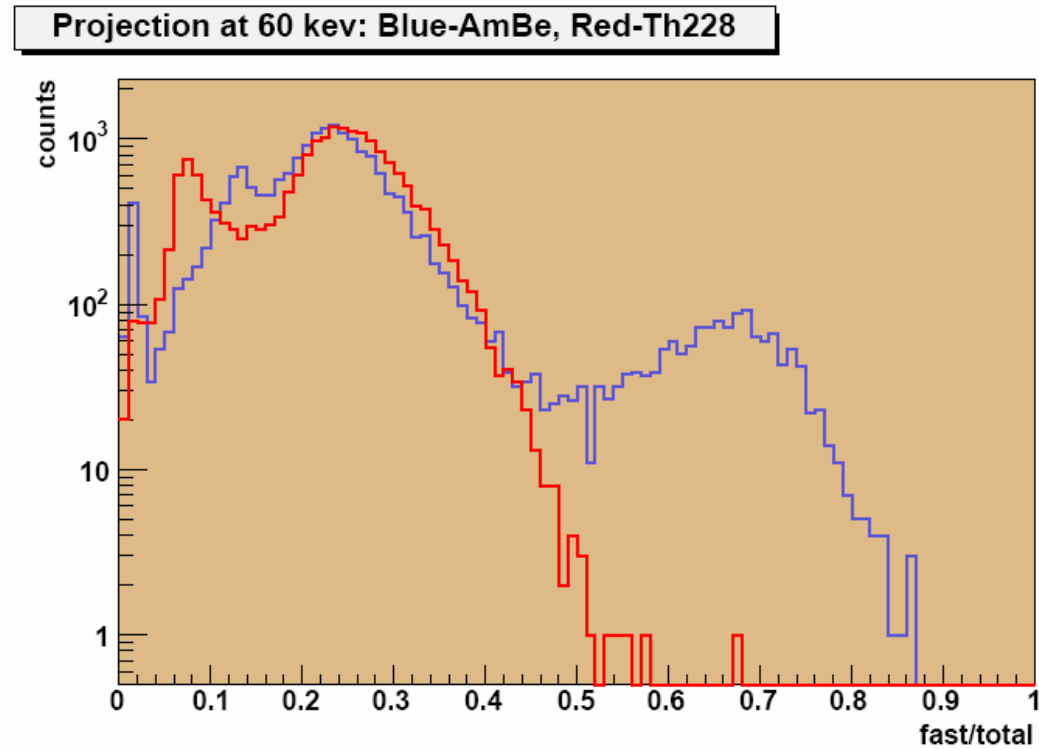
For LiAr:  $t(\text{fast}) = 7 \text{ nsec}$ ;  $t(\text{slow}) = 1.6 \text{ usec}$



# AmBe (neutron+gamma) & Th228 (gamma) sources

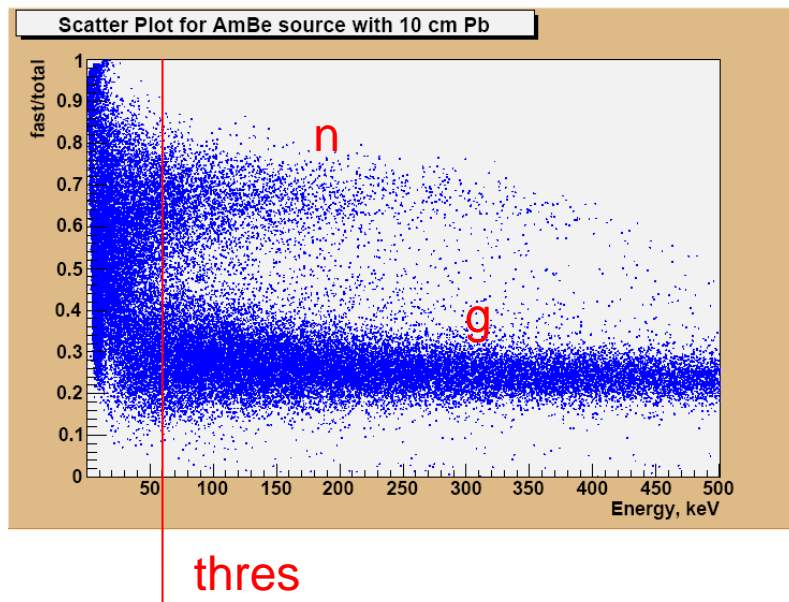


# Projection @ 60 keV: Blue-AmBe, Red-Th228

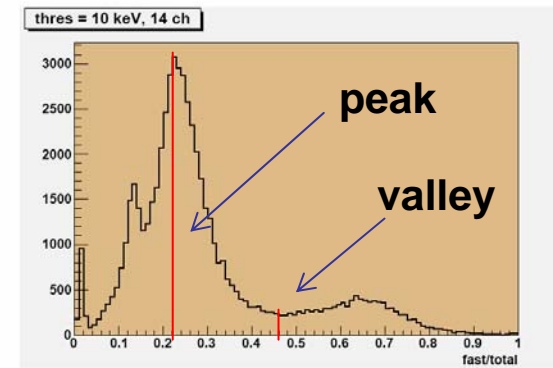


AmBe (neutron+gamma) source  
Neutron flux is  $2 \times 10^3$  1/sec

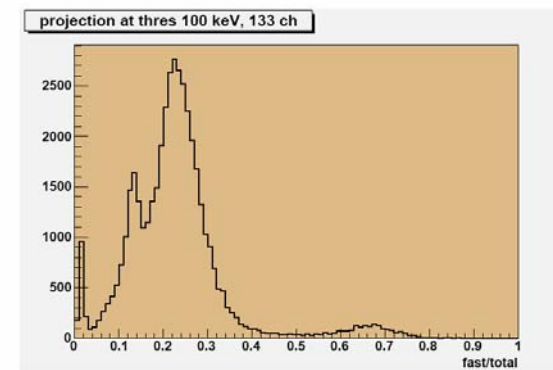
Scatter plot fast/total vs energy



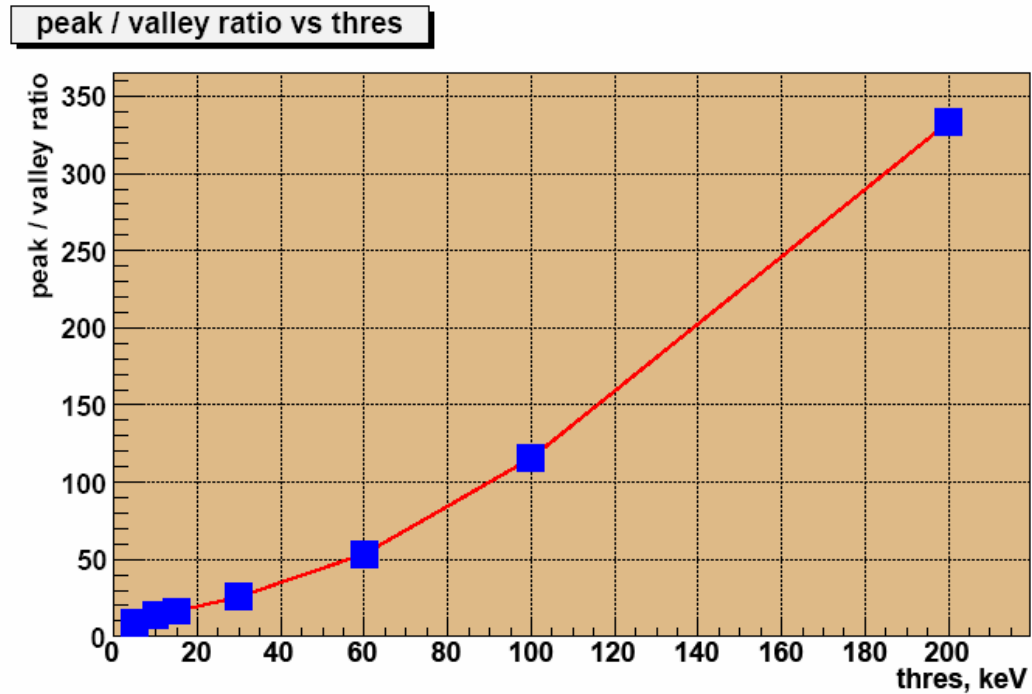
Thres=10 keV



Thres=100 keV

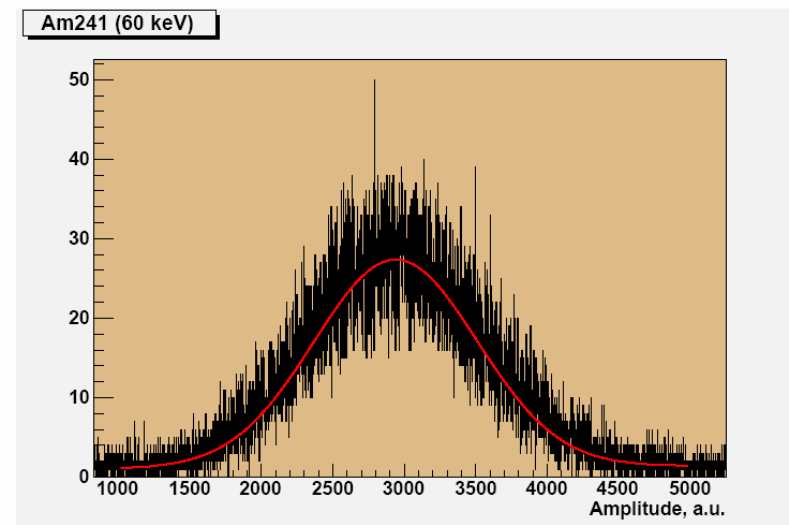
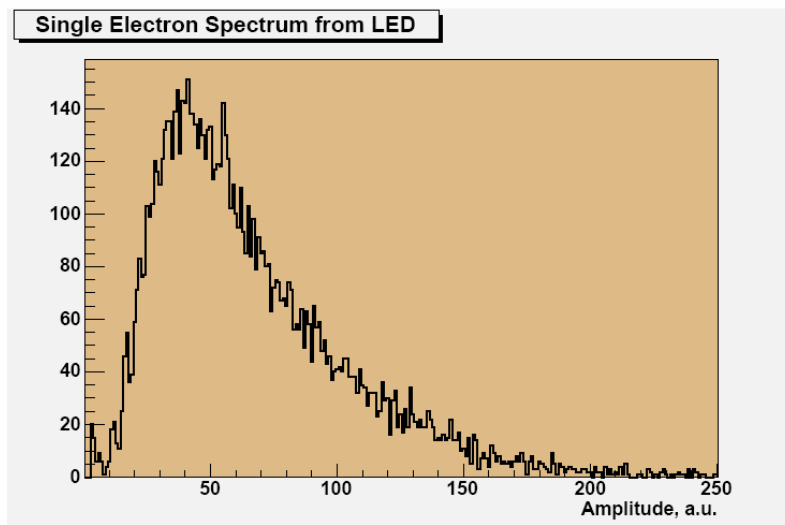


# Peak / valley ratio vs thres





Light yield: 1 pe – 42ch; 60 keV – 2940ch; 1 keV -1.17 pe



# Conclusion

- 1. Energy resolution is improved due to (-) HV supply**
- 2. It's demonstrated good n/gamma discrimination**
- 3. Light yield is stable (at least a half year)**