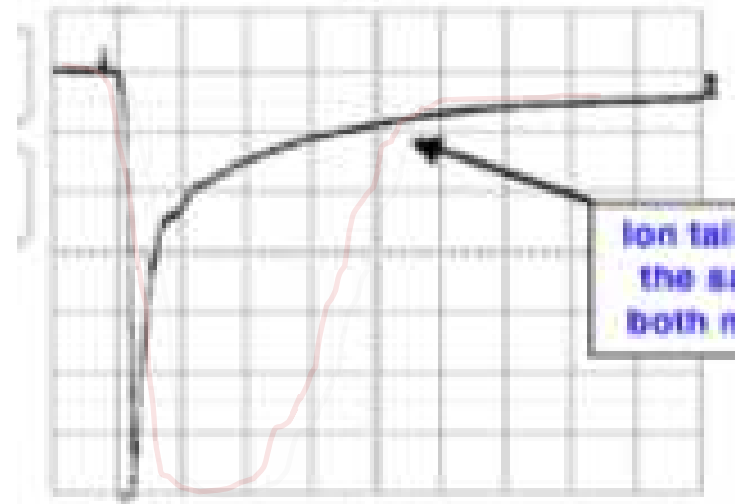


# ASDBLR response to streamer signals

## Contents:

- Recreating Anatoli's SL streamer signal
- HSpice simulation results
- Summary

# Self limiting streamer signal

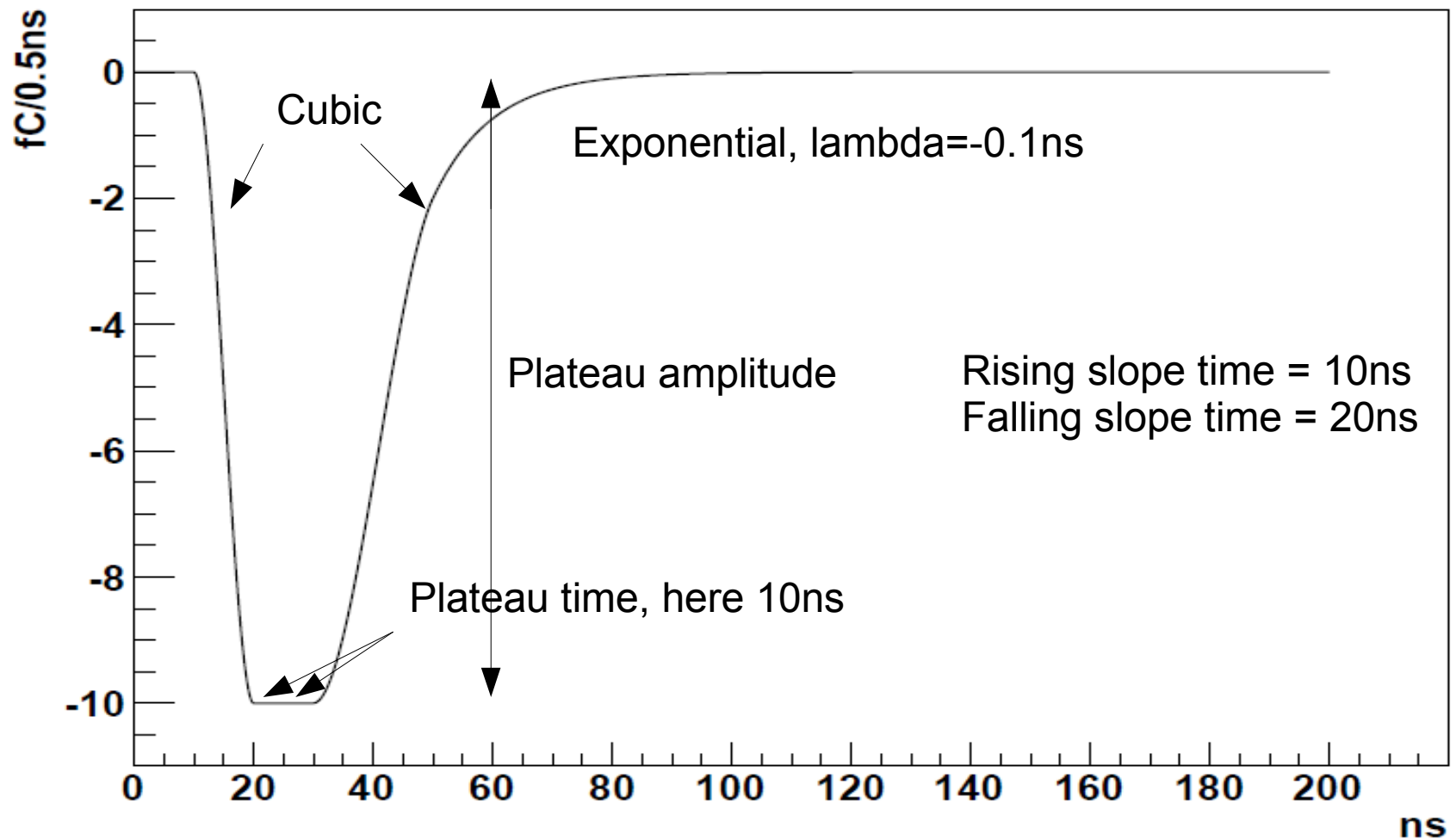


Anatoli Romaniouk, FastOR talk, 9.Dez 2011,Page 6 and 9

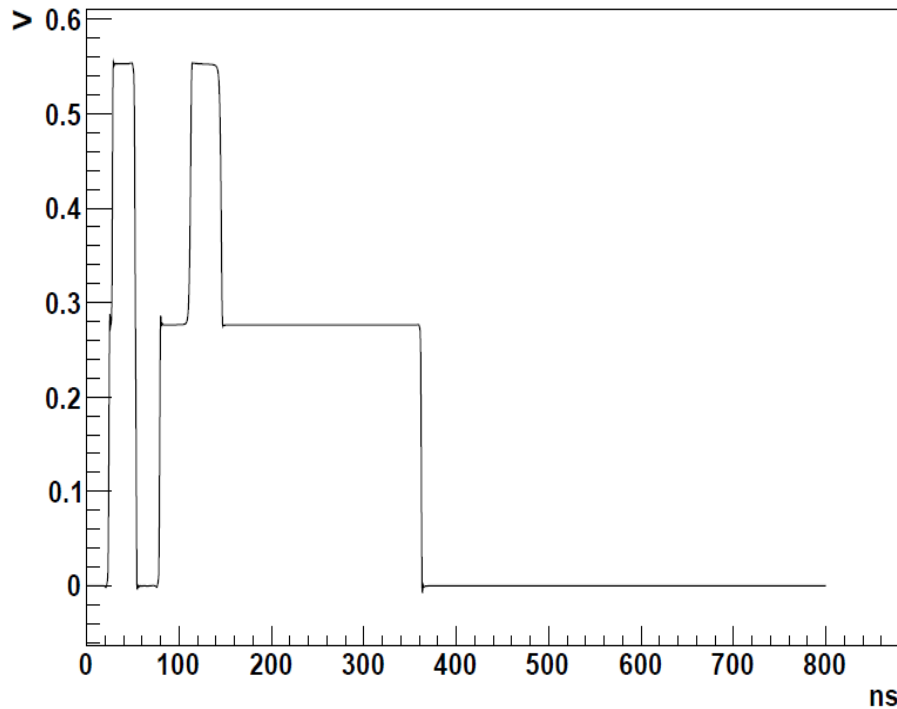
Require:

- raising slope
  - almost constant plateau
  - falling slope
  - extra "tail"
- Anatoli: Total charge  $\sim 3$  pC

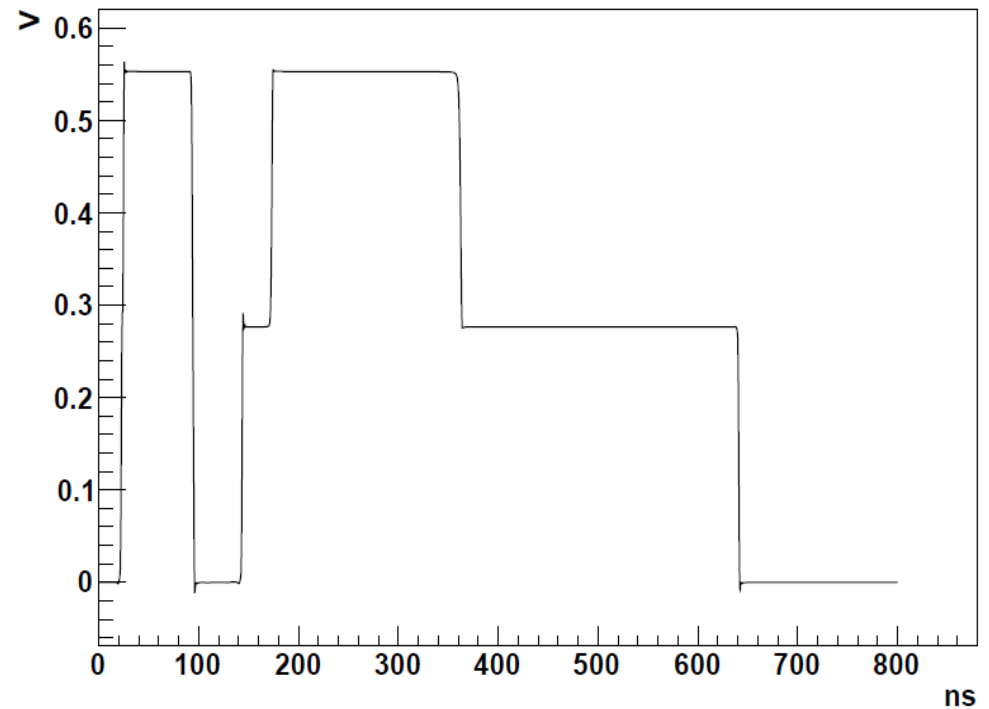
# Recreating the signal



# Hspice results, signal details



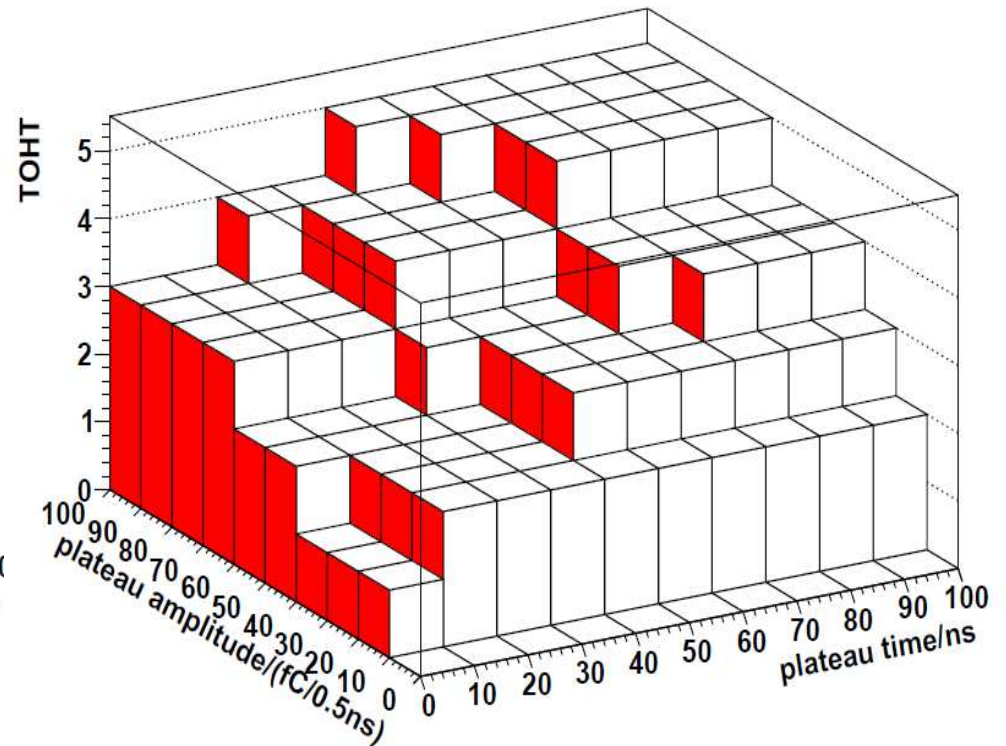
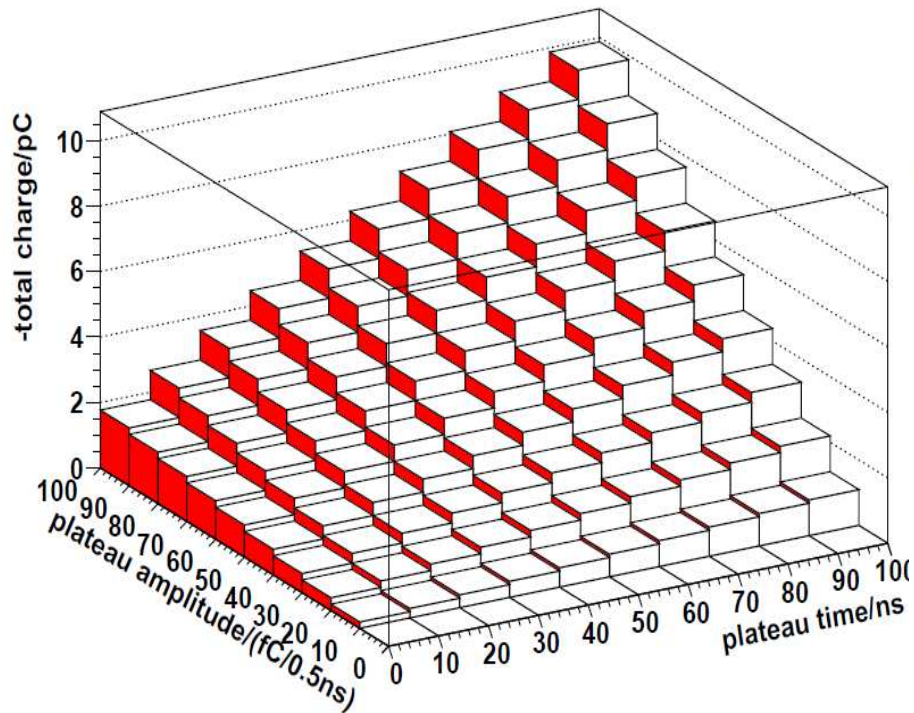
Amplitude : 10fC/0.5ns,Time : 10ns



Amplitude : 50fC/0.5ns,Time : 50ns

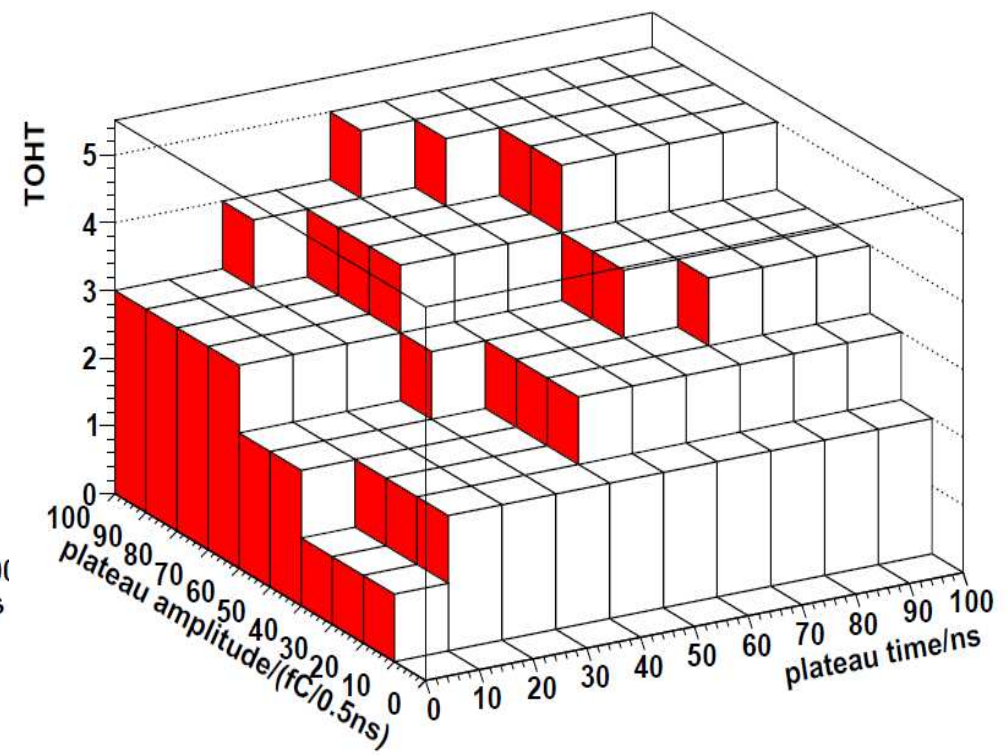
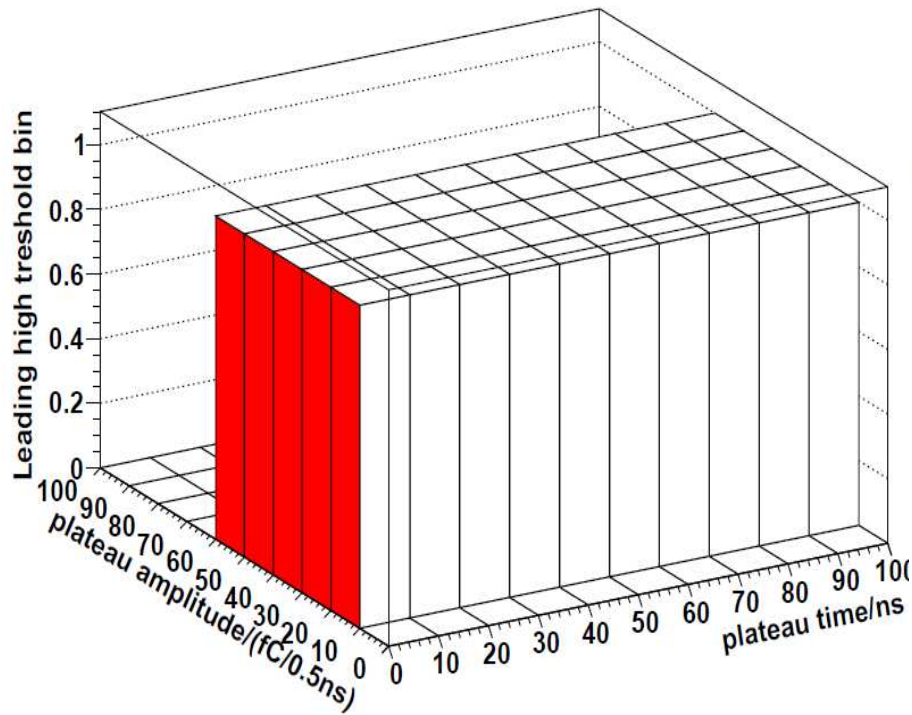
- Signal is rebinned to 25ns bins(simplified DTMROC)
- First area above threshold used as ToHT
- Trailing bin+ToHT gives complete bit string for 3 bits for HSpice results

# HSpice results



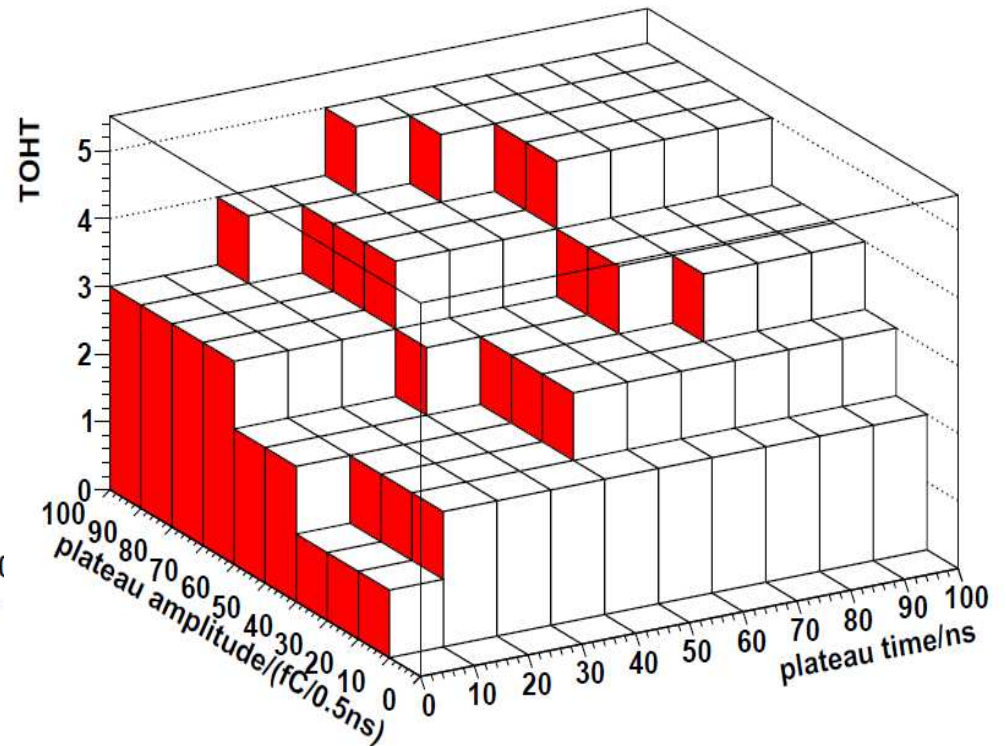
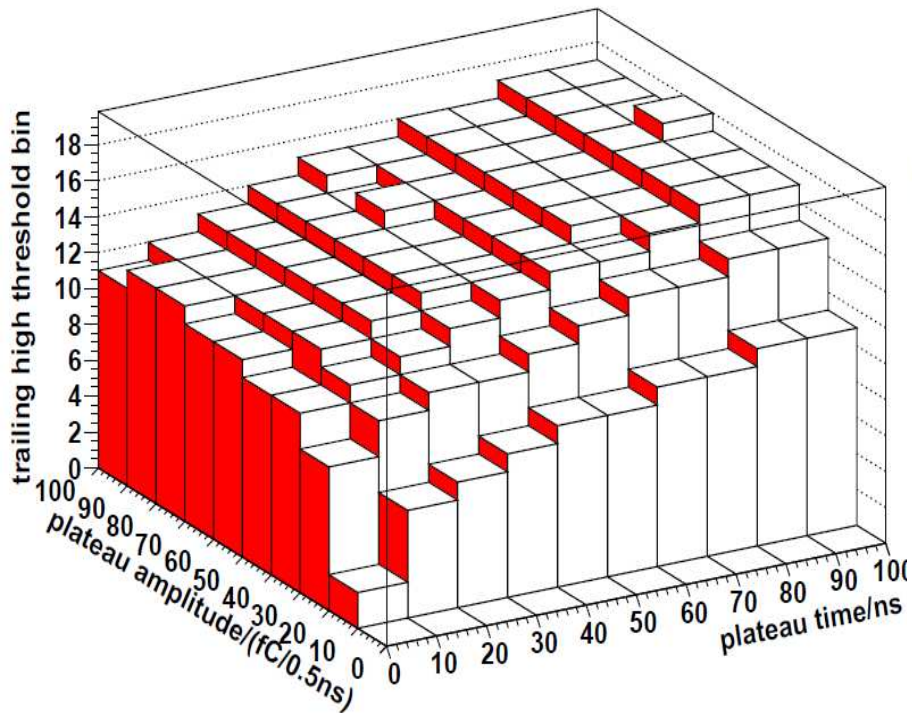
- Total charge depends almost linear on amplitude\*time
- ToHT behaviour shows number of connected 25ns bins (first occurrence)

# HSpice results, leading bin



High threshold bin(0)=0 if amplitude<60...

# Hspice results, trailing bin



Some dependence of the trailing bin  
On the signal properties, but always  
>5, most of the time >10

# Summary&Comments

- Signal triggers high threshold in parts
- Second part has a longer time over threshold time than the first
- Does this mean the FastOR will trigger twice for one event?
- Simulation of the DTMROC not included



# Source code

Available at <http://github.com> as “trtgarf”, currently:

<https://github.com/AlexanderC2/trtgarf>

# Backup, Anatoli's HL discriminator

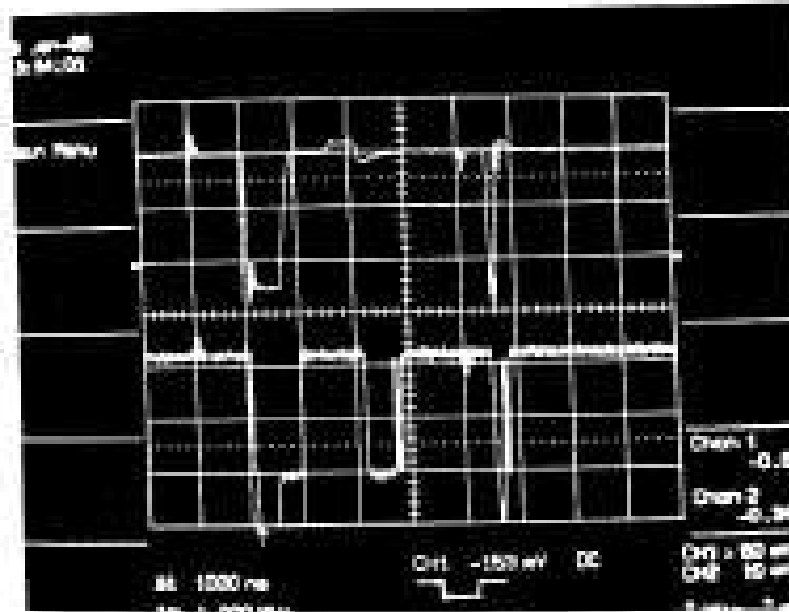
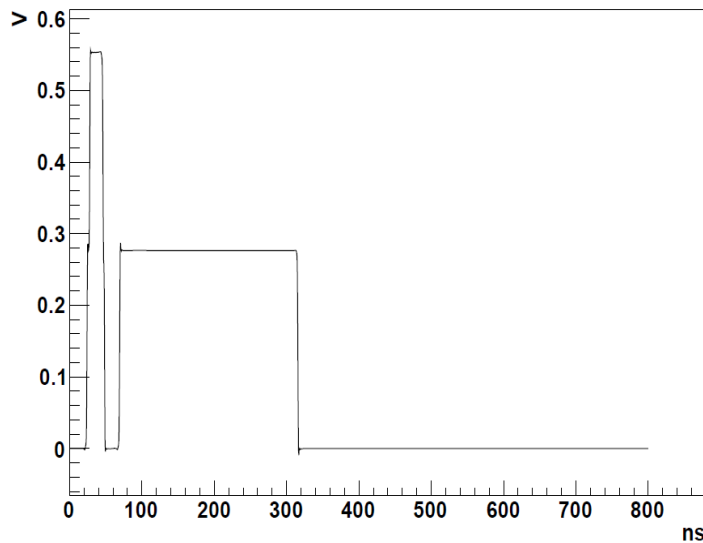


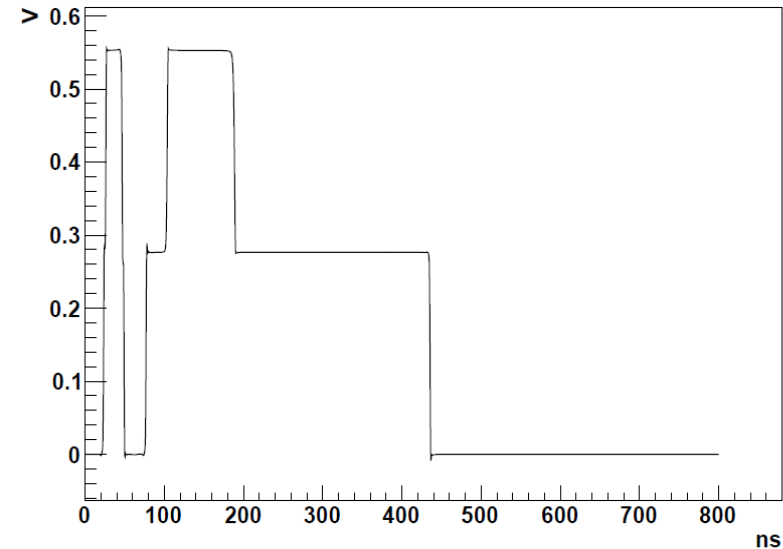
Fig.14 ASDBLR response on streamer,  
BLR output - top in photo. Discriminator output -bottom in photo.

Assuming a total charge around 100fC? (12-15 times Fe55)  
If true : Signal considerable smaller than what is expected by HIPS.

# Backup, Short Signal response



Amplitude : 10fC/0.5ns,Time : 0ns



Amplitude : 20fC/0.5ns,Time : 0ns