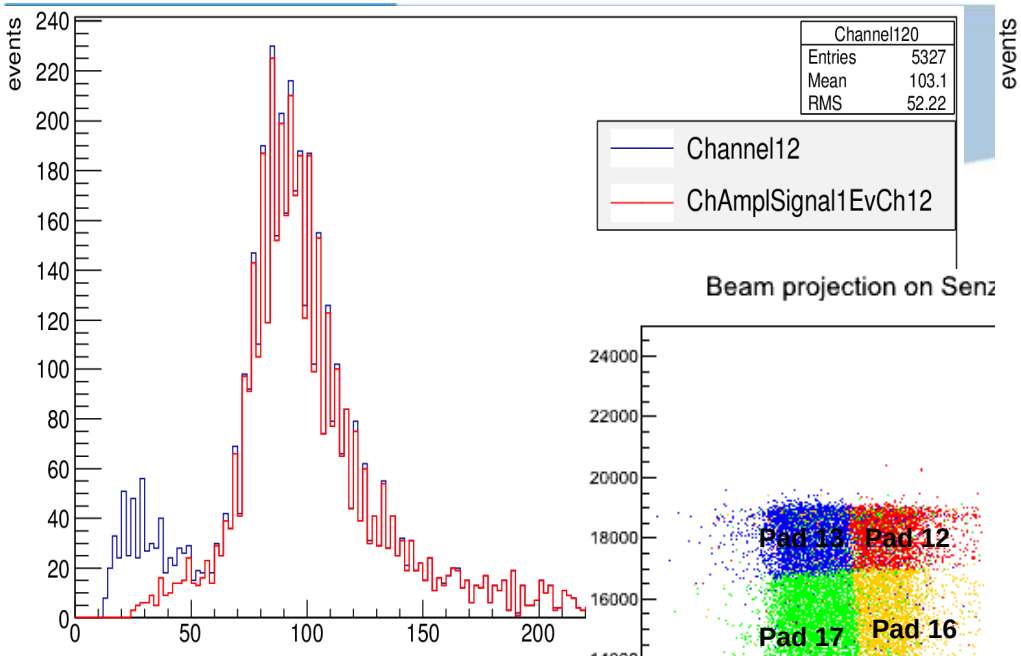
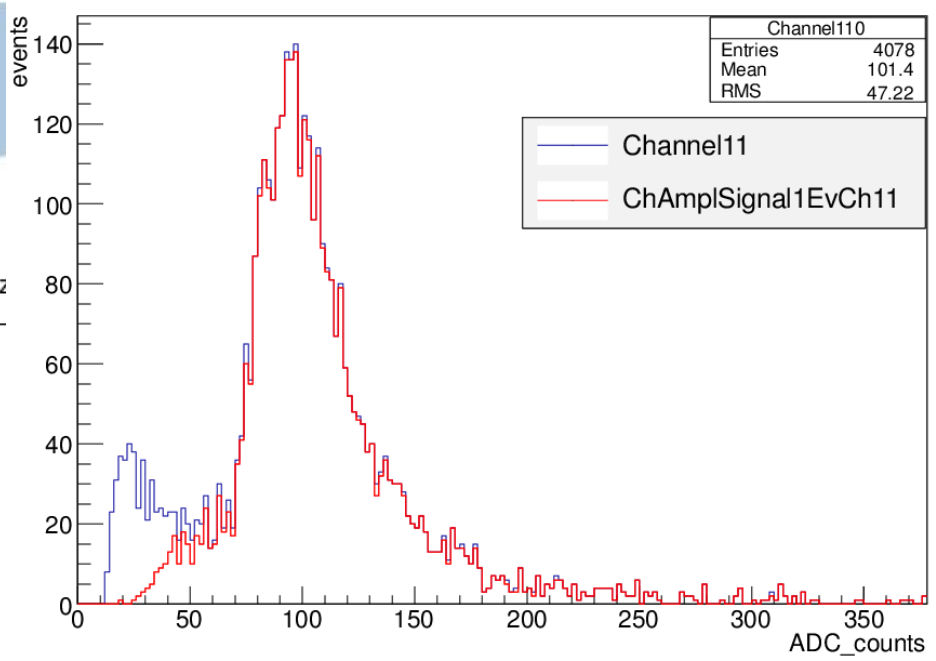
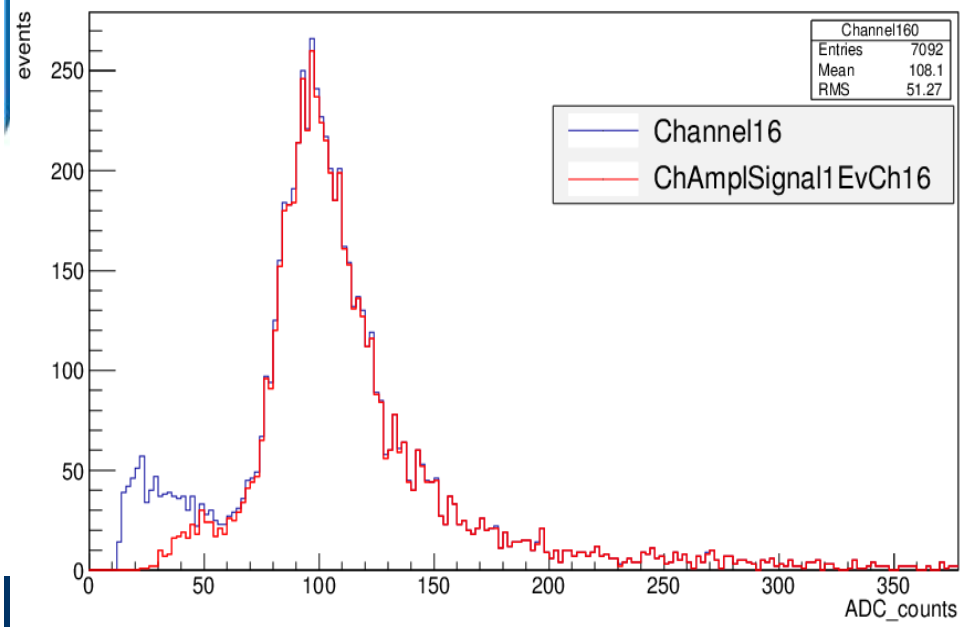
Edge effects and cross-talk evaluation

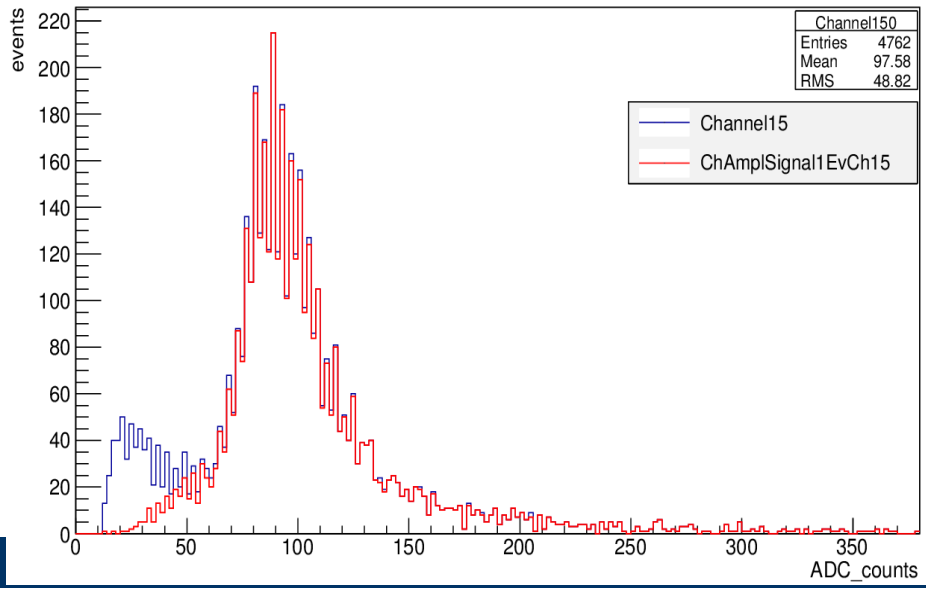
Veta Ghenescu, Titi Preda


Channel120
Entries 5327
Mean 103.1
RMS 52.22
Channel12
ChAmplSignal1EvCh12
events

Beam projection on Senz
Pad 13
Pad 12
Pad 17
Pad 16


Channel110
Entries 4078
Mean 101.4
RMS 47.22
Channel11
ChAmplSignal1EvCh11
events
ADC_counts


Channel160
Entries 7092
Mean 108.1
RMS 51.27
Channel16
ChAmplSignal1EvCh16
events
ADC_counts

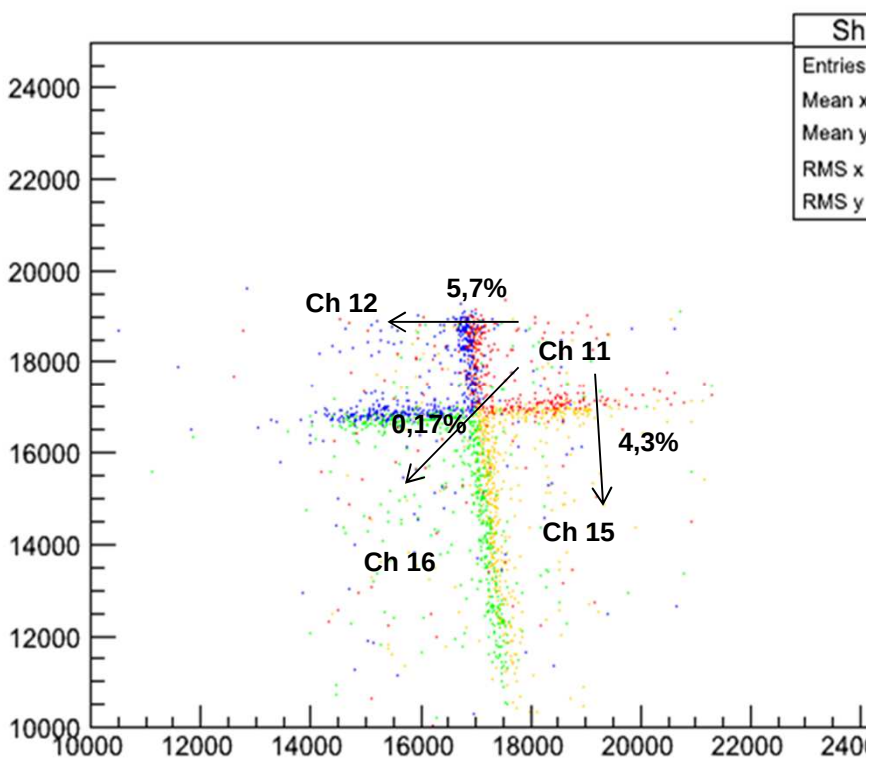

Channel150
Entries 4762
Mean 97.58
RMS 48.82
Channel15
ChAmplSignal1EvCh15
events
ADC_counts

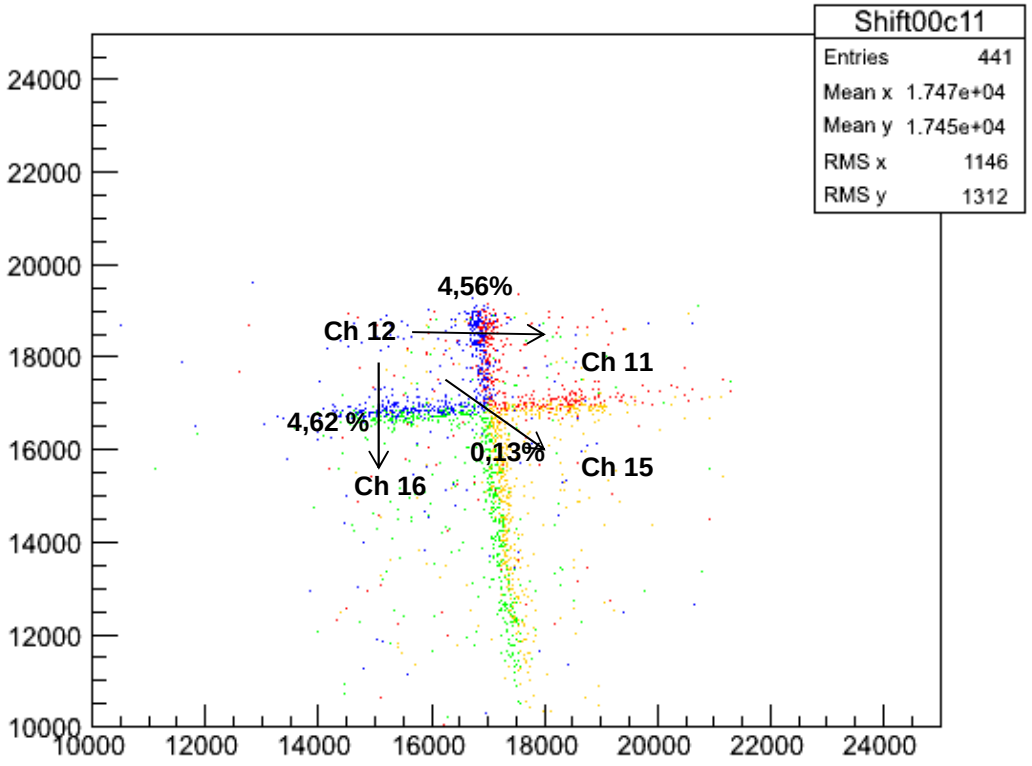
Edge effects and Crosstalk evaluation for $(S_1 - S_2)/S_1 = 100\%$

Channel number	11			12			15			16			
	N_{ij}	N_{ij}/N_i	$\sigma(N_{ij}/N_i)$	N_{ij}	N_{ij}/N_i	$\sigma(N_{ij}/N_i)$	N_{ij}	N_{ij}/N_i	$\sigma(N_{ij}/N_i)$	N_{ij}	N_{ij}/N_i	$\sigma(N_{ij}/N_i)$	N_i
11	0	-	0,000	234	5,7%	0,004	175	4,3%	0,003	7	0,17%	0,001	4078
12	243	4,56%	0,003	-	0,00%	-	7	0,13%	0,001	246	4,62%	0,003	5327
15	160	3,36%	0,003	13	0,27%	0,001	0	0,00%	-	359	7,54%	0,004	4762
16	11	0,16%	0,000	228	3,2%	0,002	352	5%	0,003	0	-	-	7092

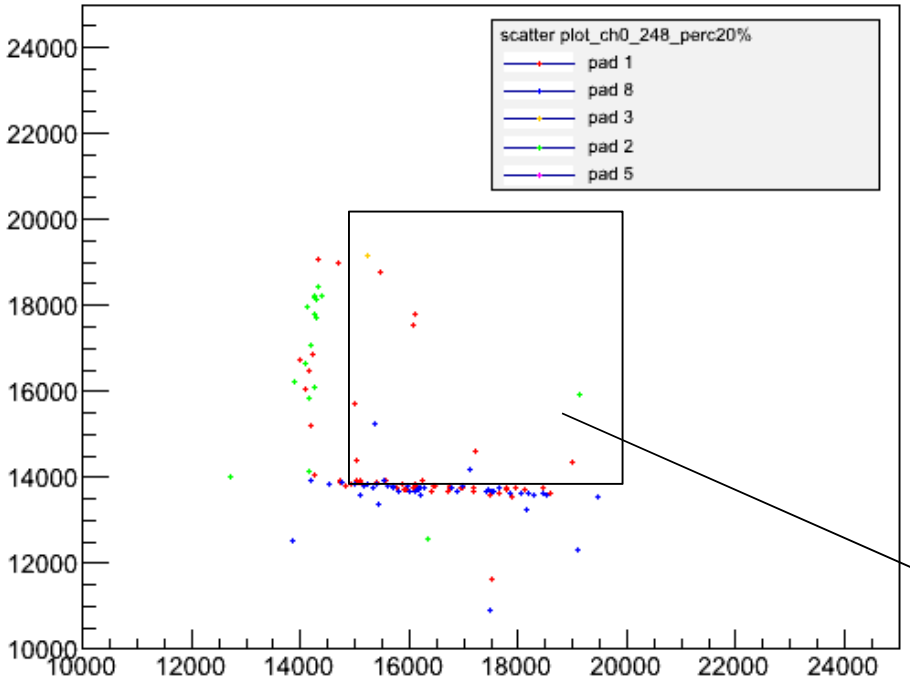
where: **N_{ij} – triggers number for electron interaction with pad *i* which induce signal on pad *j*;**

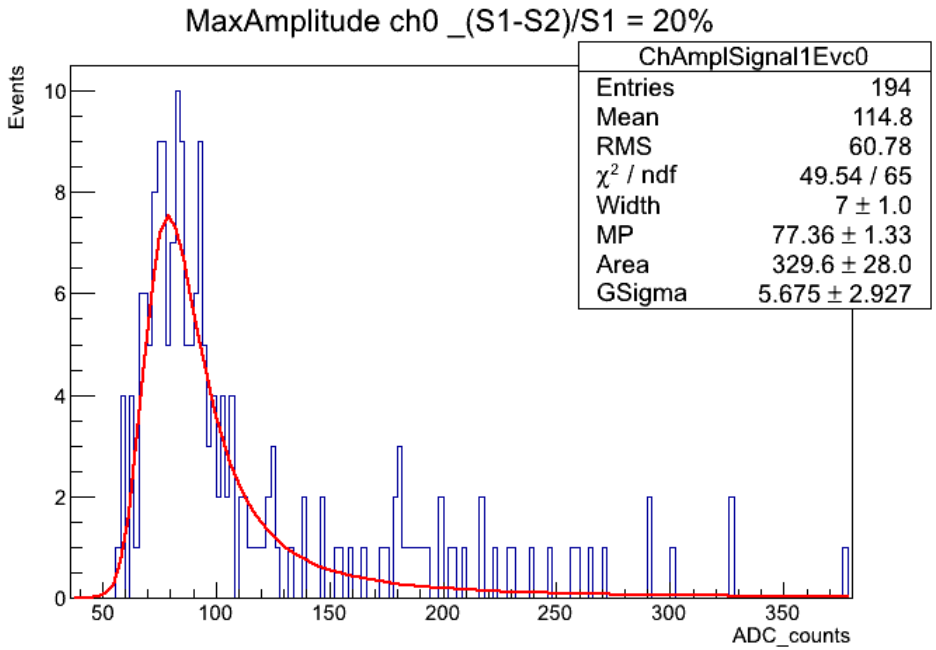
N_i – total triggers number which produce signal on pad *i* ;

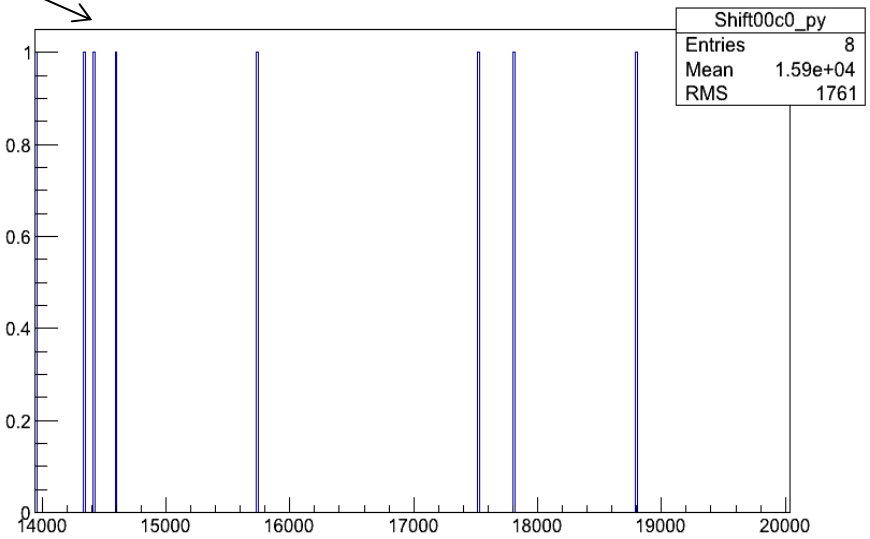




Edge effects and Crosstalk evaluation for $(S_1 - S_2)/S_1 = 20\%$

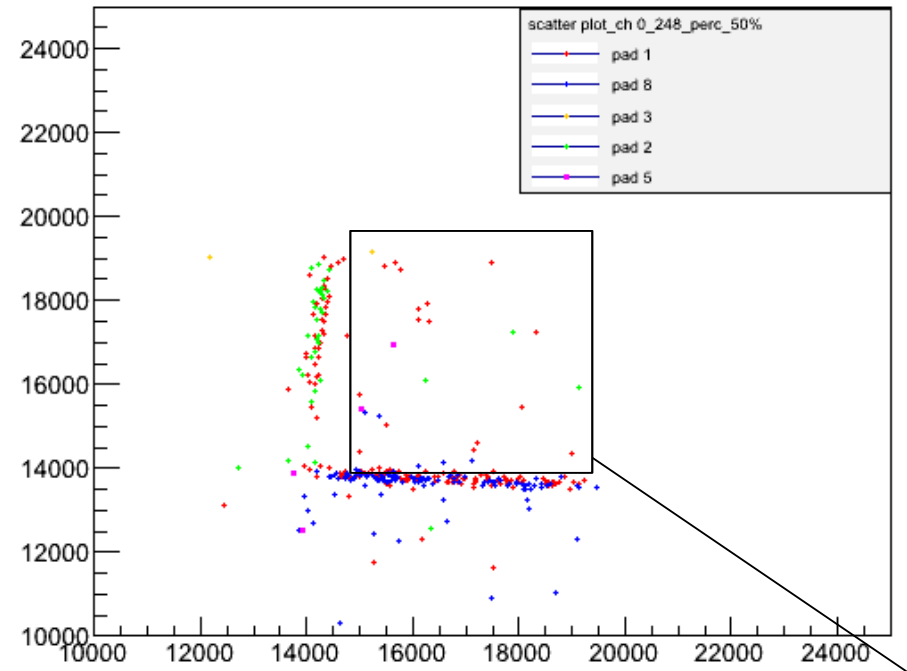


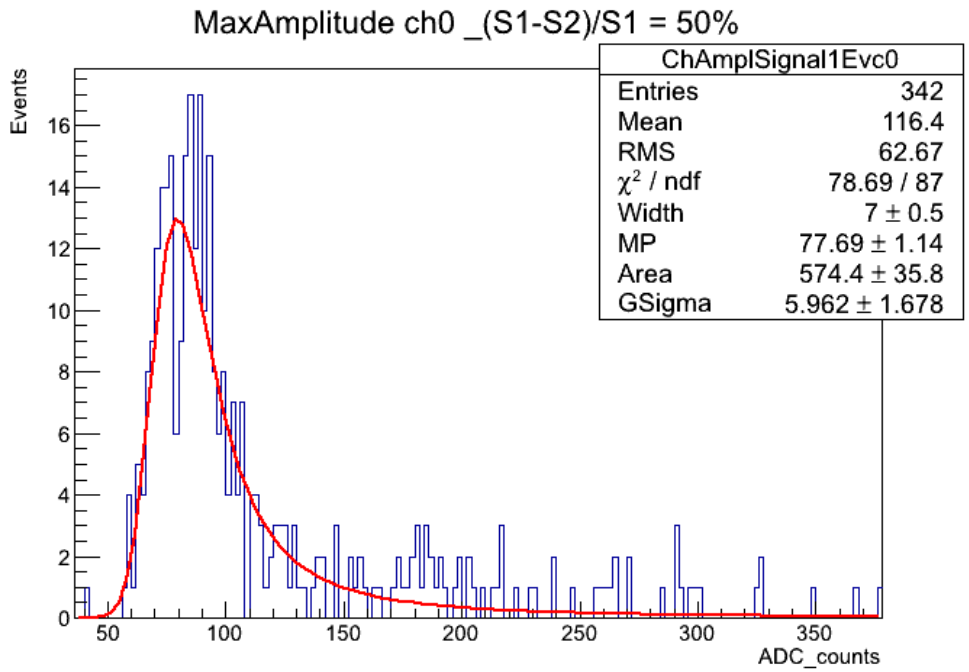


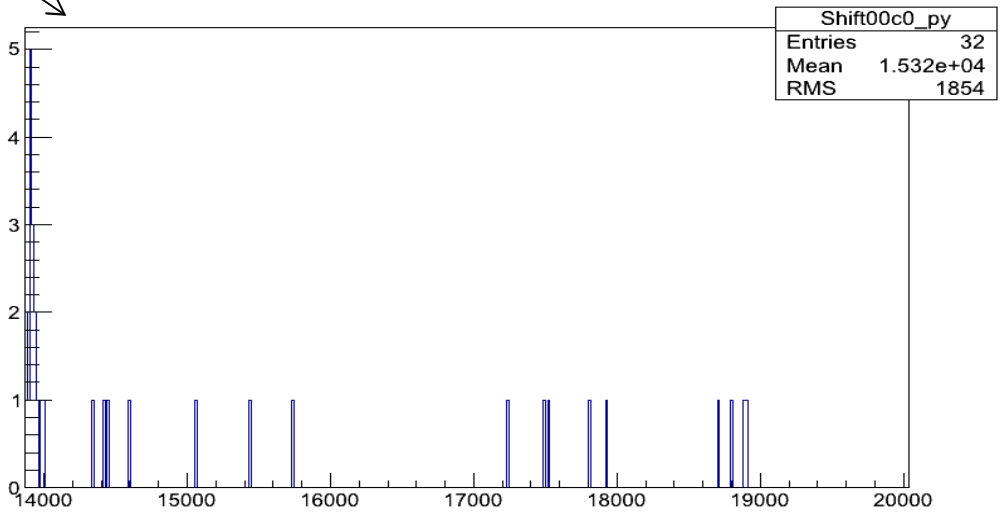


- Pad 1, run 248
- For pads reconstruction we used only one run/pad,

Edge effects and Crosstalk evaluation for $(S_1 - S_2)/S_1 = 50\%$

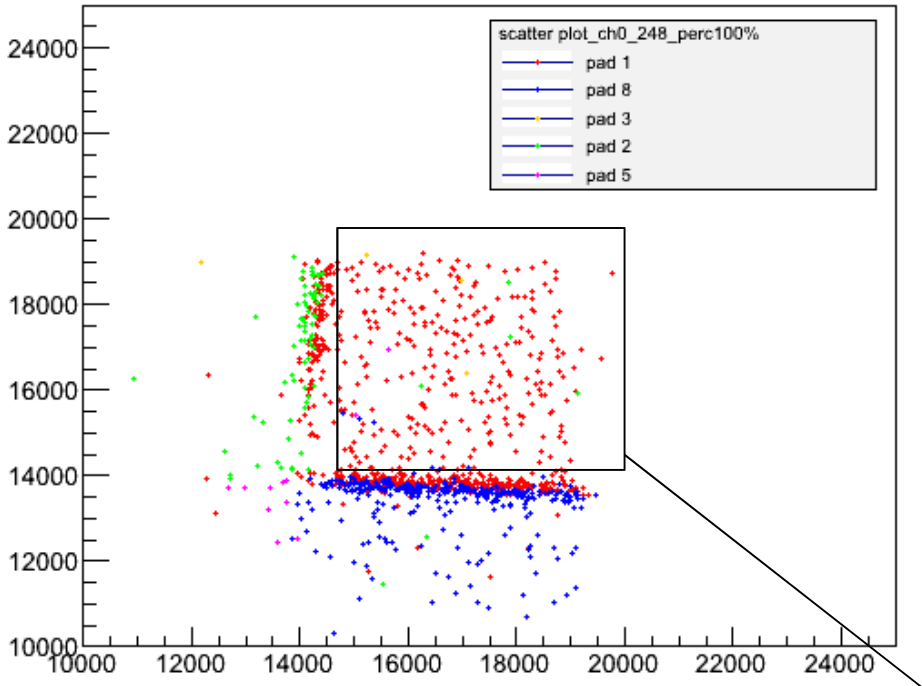


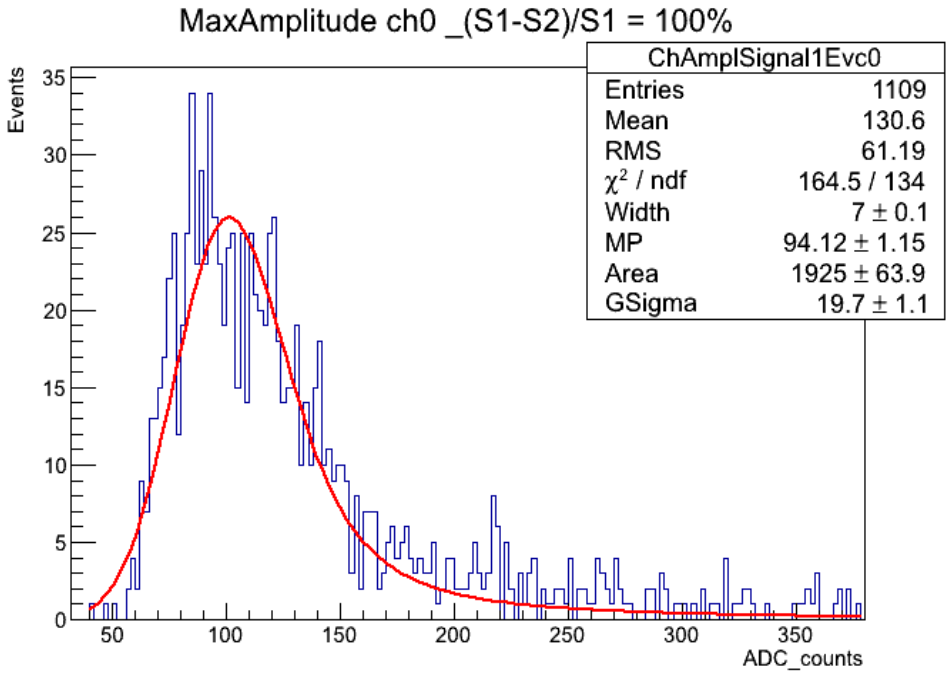


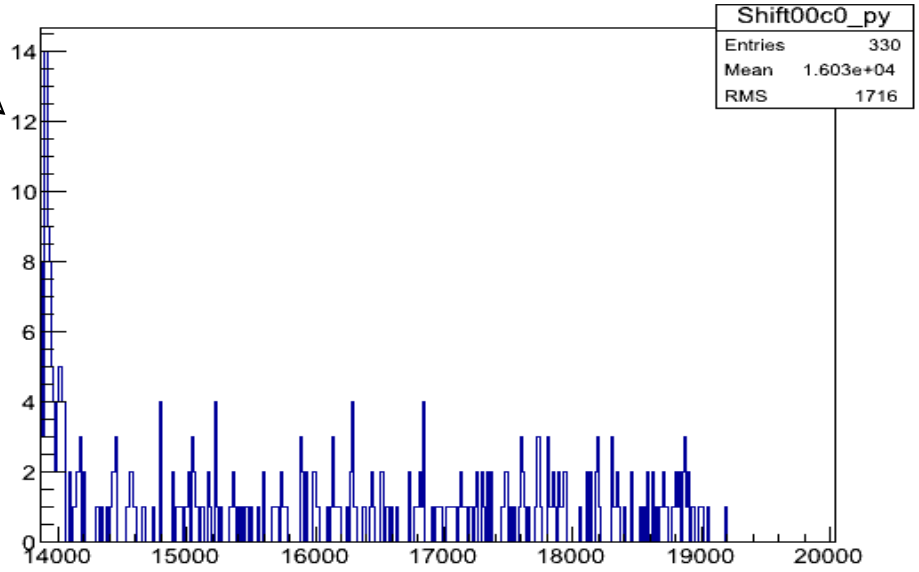


- Pad 1, run 248

Edge effects and Crosstalk evaluation for $(S_1 - S_2)/S_1 = 100\%$

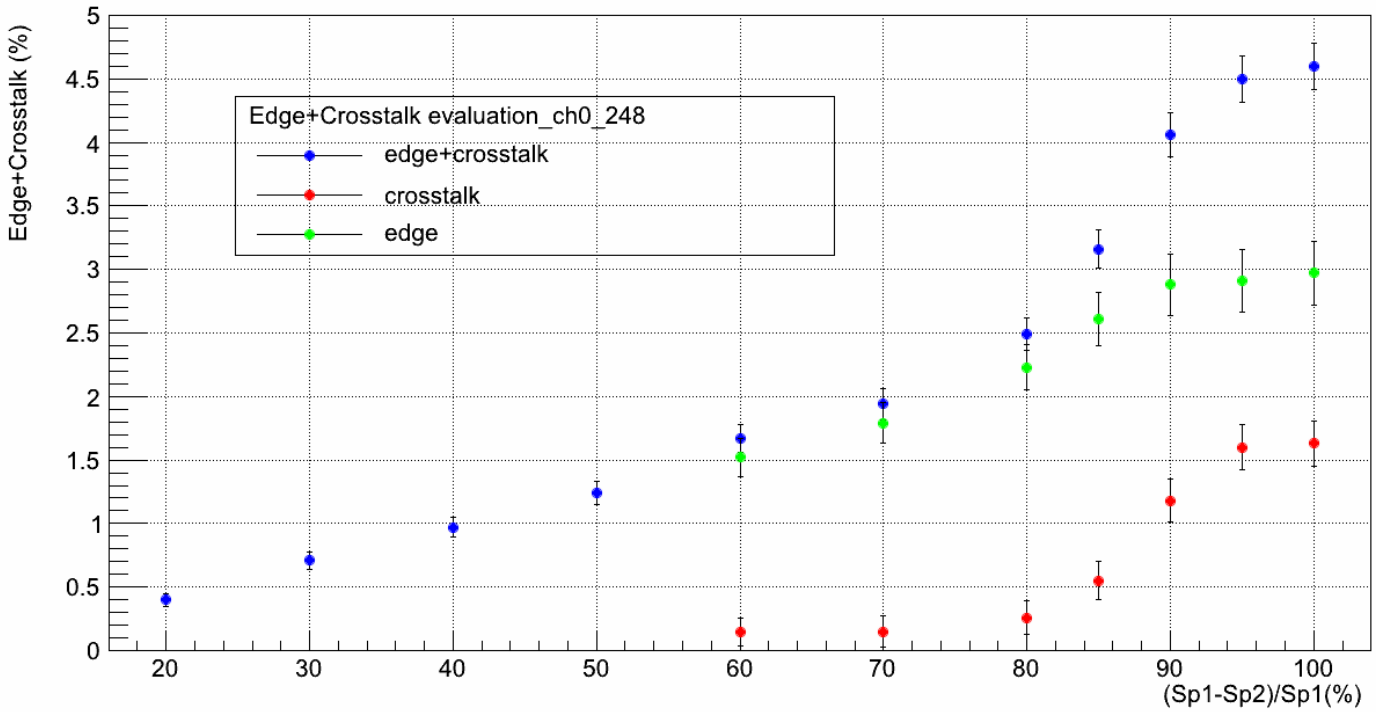




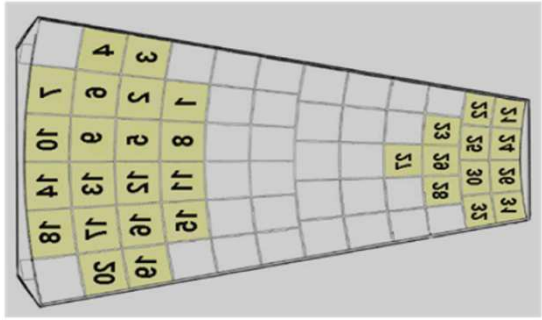


- Pad 1, run 248
- For pads reconstruction we used only one run/pad,

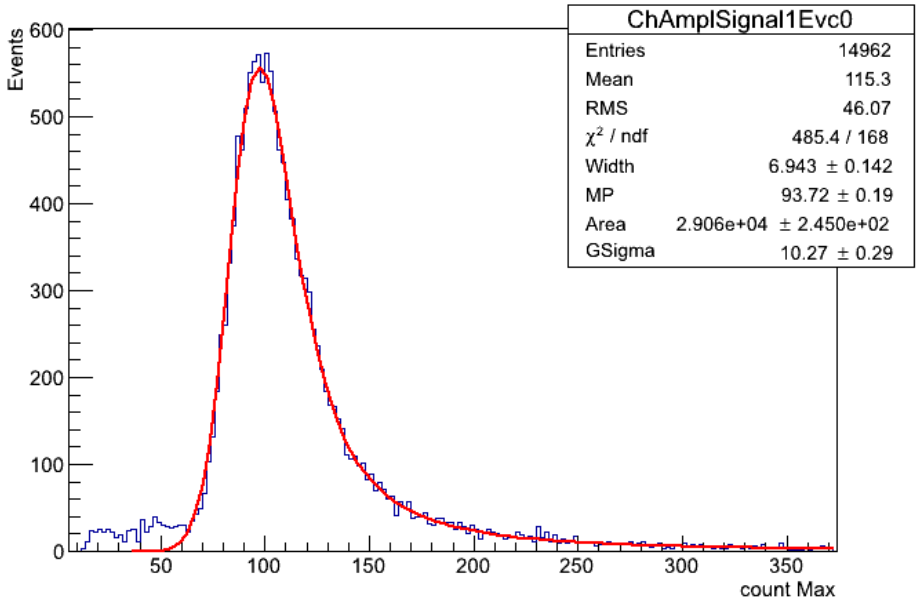
Attempt for a quantitative study of edge + Crosstalk effects

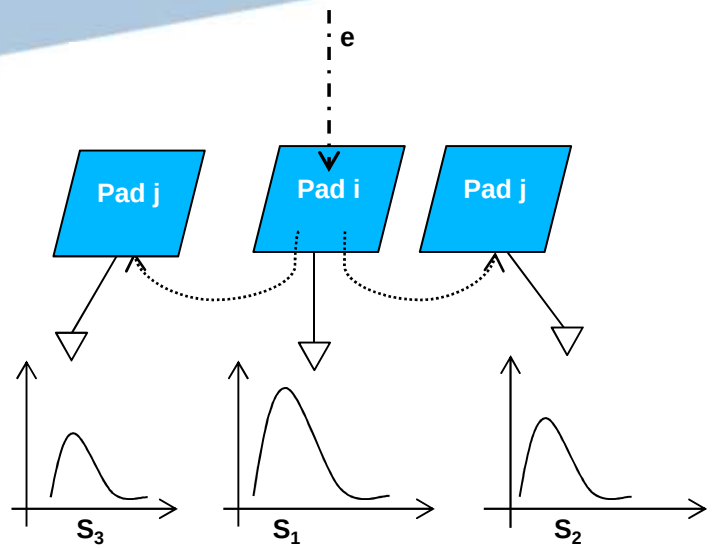


- Crosstalk are smaller then 1,8% ;
- Crosstalk have an important contribution for (Sp1-Sp2)/Sp1 >80%;
- Edge effects are smaller then 2,5% for 2 borders ~ 2*l*, where *l* ~ 4mm.

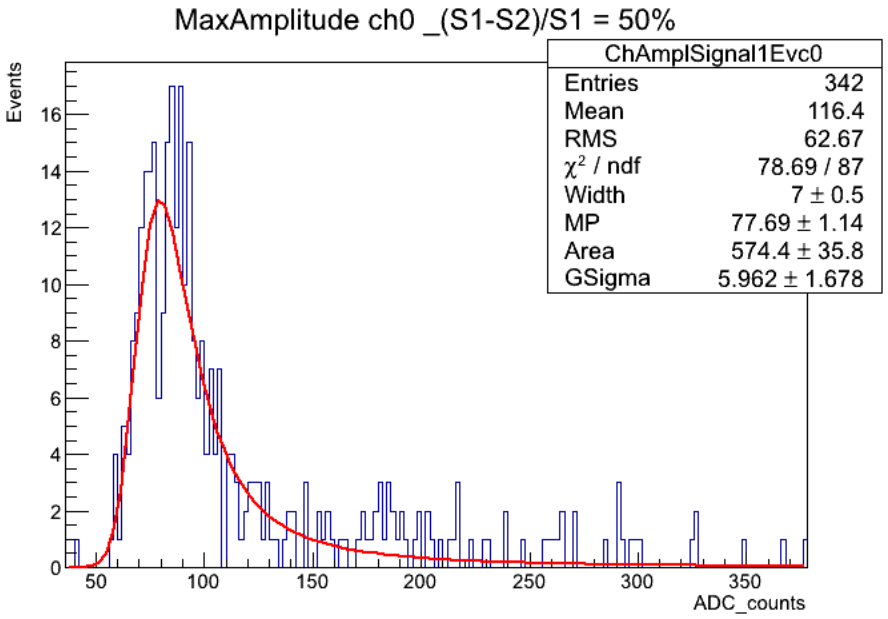


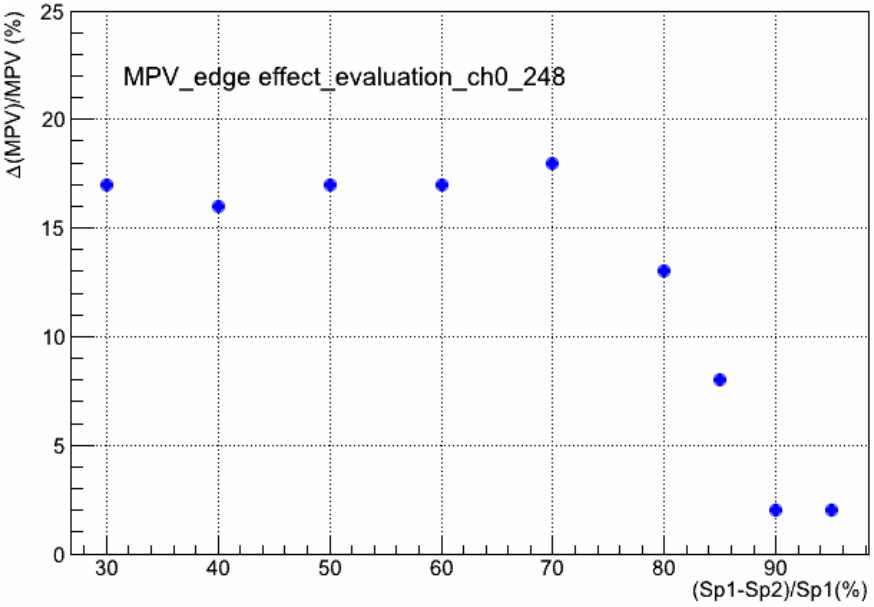
Edge effects on MPV values





$$\Delta MPV = MPV - MPV_{sum}$$





Conclusions

- We developed a methodology for track reconstruction;
- We found a maximum of edge effect + cross-talk of about 4,5 % for pad 1, run 248 produced by 4 neighbors pad (2, 3, 5, 8);
- MPV of the sum Signal decrease about 15% – 20%;