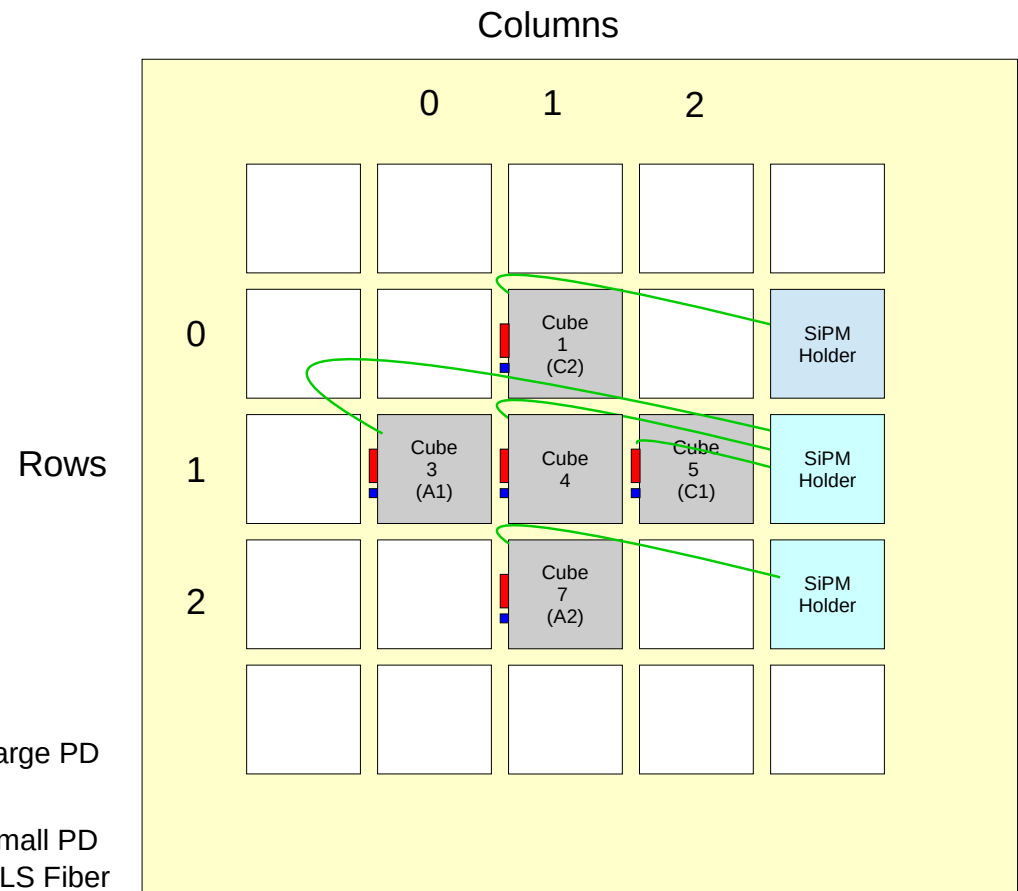


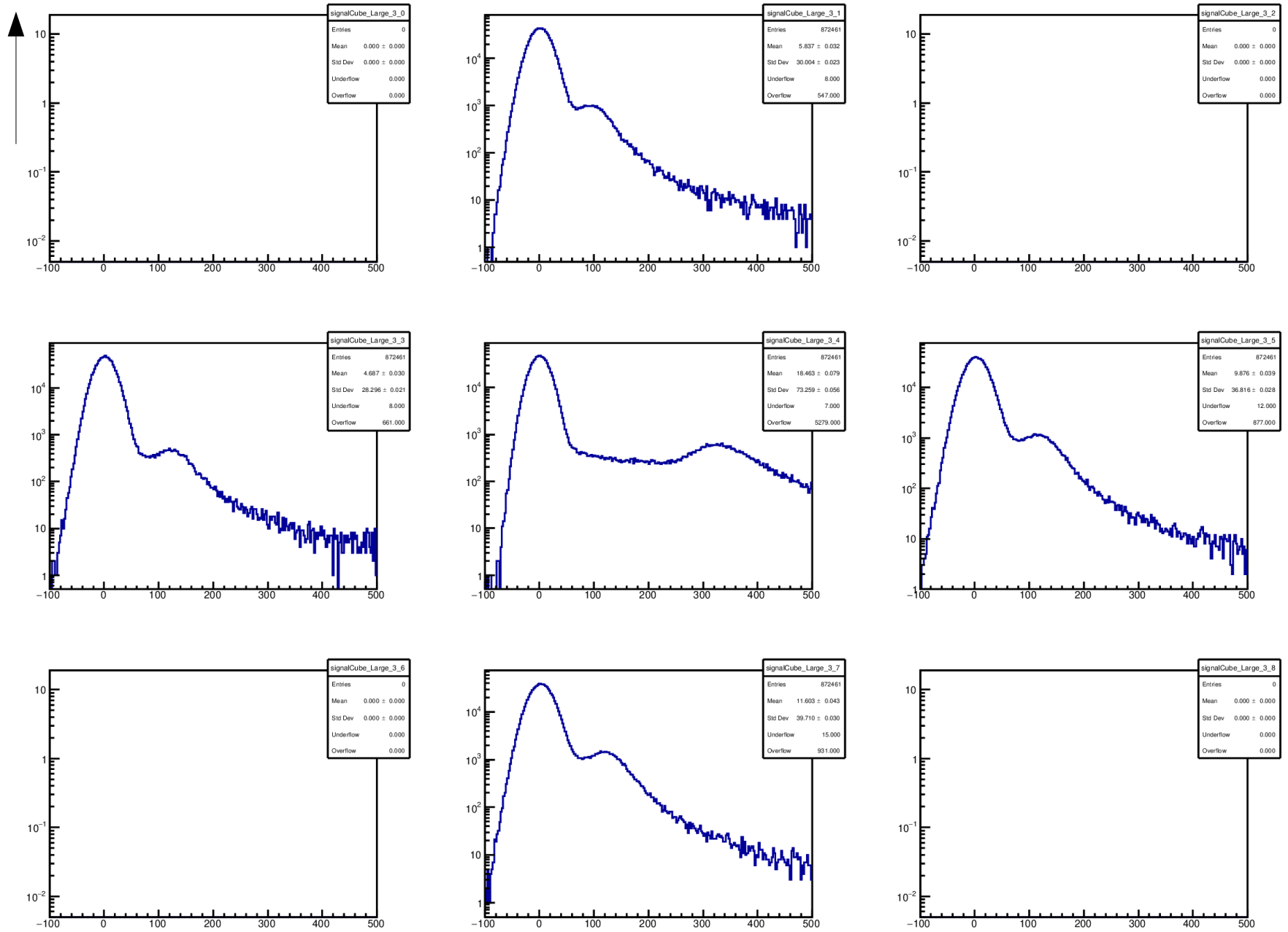
Determinazione del rapporto LPD/SPD col prototipo



Calibrazione con le MIP

LPD signal

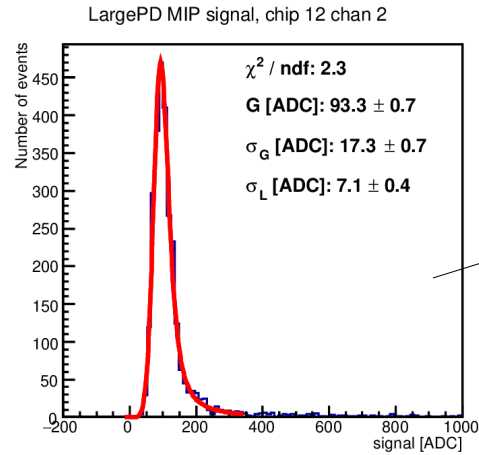
Number of events



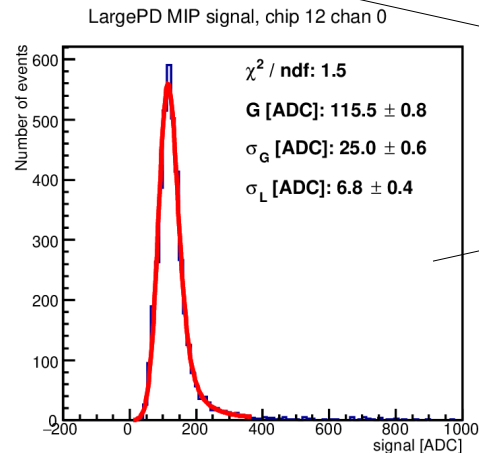
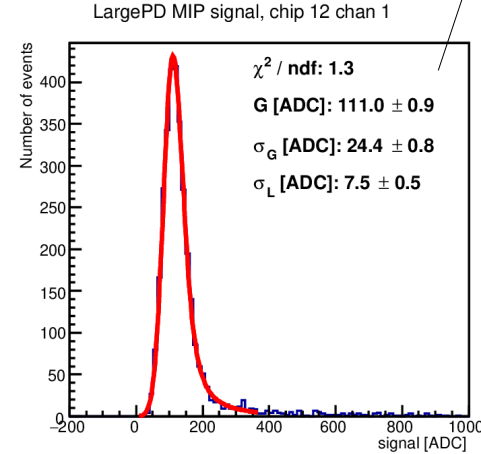
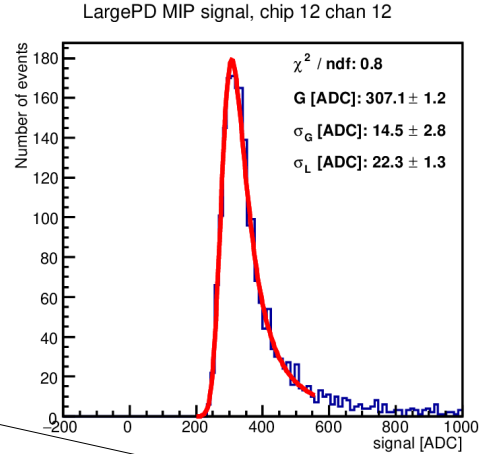
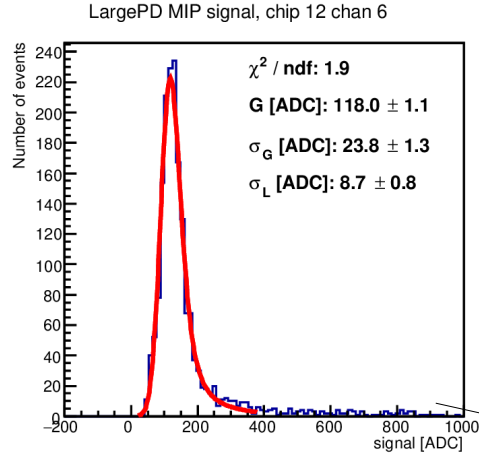
Signal [ADC]

Riempio l'istogramma con una soglia minima a 60 ADC, eseguo il fit della Langau

LPD



Cubi cinesi → MIP:
93.3 +- 0.7 ADC
111.0 +- 0.9 ADC



Cubi Ambrosi → MIP:
115.5 +- 0.8 ADC
118.0 +- 1.1 ADC

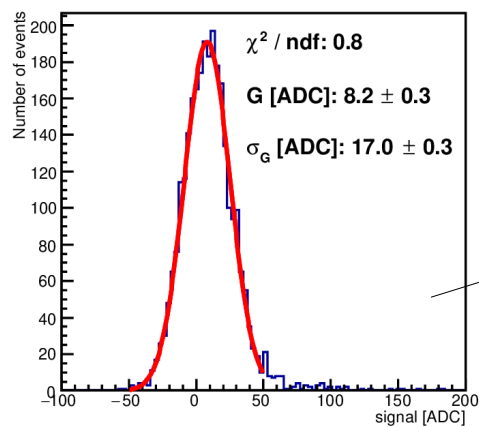
Considerando un rilascio della MIP nel cristallo di 30 MeV, i fattori di conversione da ADC a MeV risultano i seguenti:

Stima brutale!

Cubo	Fattore di conversione [MeV/ADC]	Saturazione in alto guadagno (~50000 ADC)	Saturazione in basso guadagno (700000 ADC)
C1	~0.27	~13.5 GeV	~190 GeV
C2	~0.32	~16 GeV	~224 GeV
A1	~0.25	~12.5 GeV	~175 GeV
A2	~0.26	~13 GeV	~182 GeV

SPD

SmallPD MIP signal, chip 13 chan 2

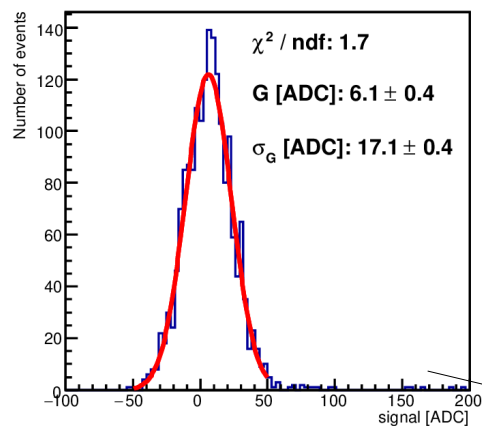


Cubi cinesi $\rightarrow$ MIP:

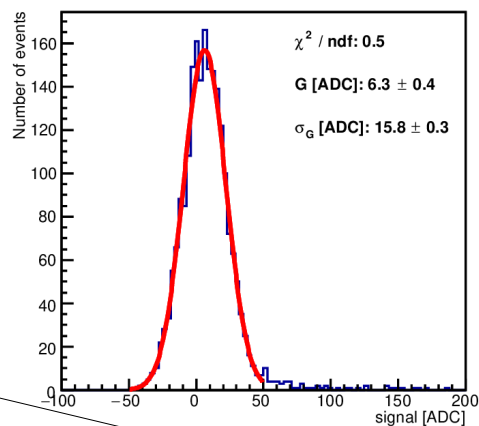
$8.2 \pm 0.3 \text{ ADC}$

$9.2 \pm 0.4 \text{ ADC}$

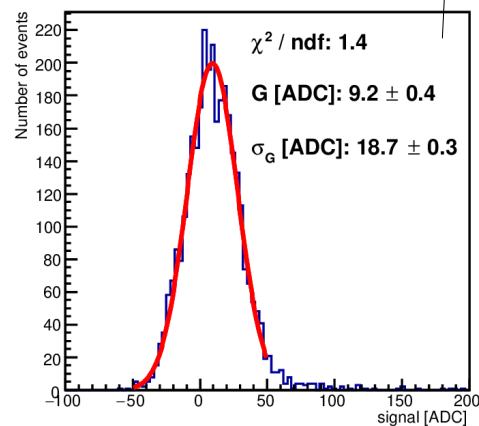
SmallPD MIP signal, chip 13 chan 6



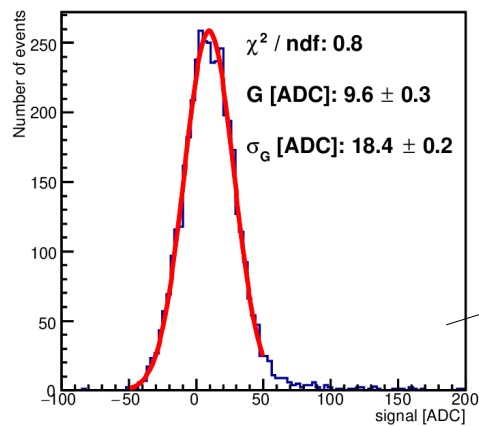
SmallPD MIP signal, chip 13 chan 12



SmallPD MIP signal, chip 13 chan 1



SmallPD MIP signal, chip 13 chan 0

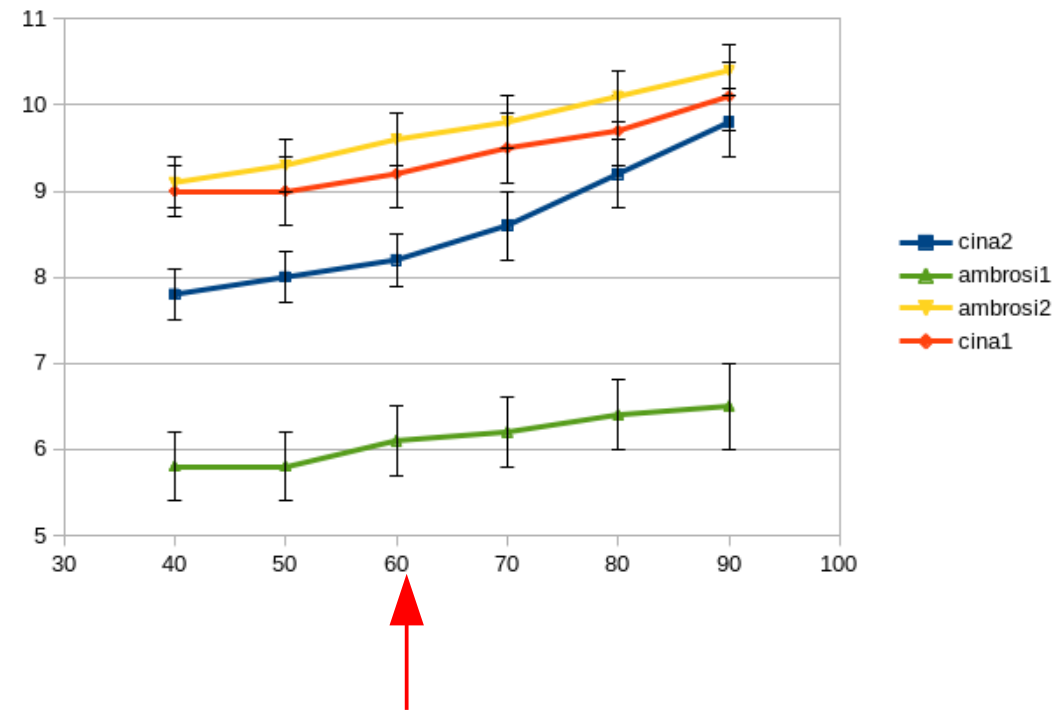
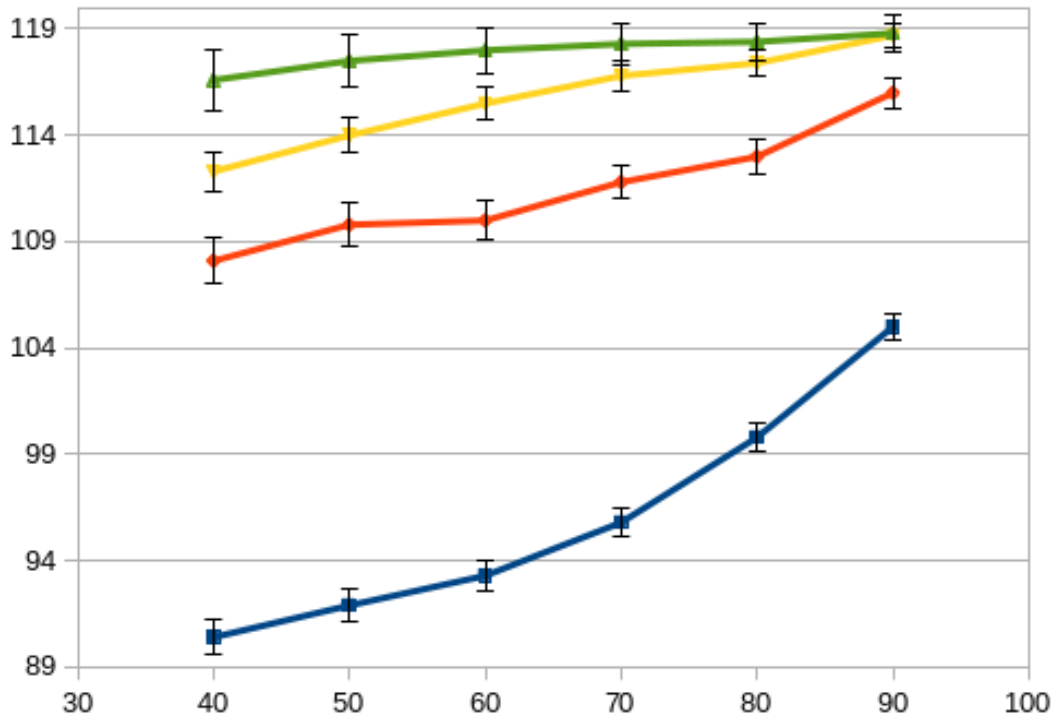


Cubi cinesi $\rightarrow$ MIP:

$9.6 \pm 0.3 \text{ ADC}$

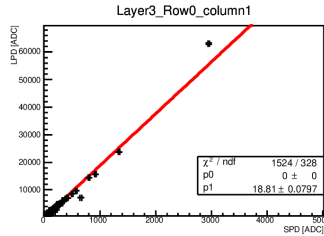
$6.1 \pm 0.4 \text{ ADC}$

Picchi delle MIP al variare della soglia

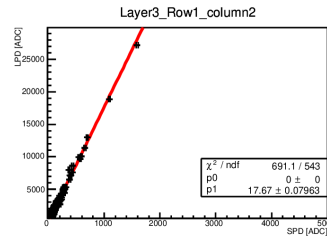


Rapporto tra LPD e SPD

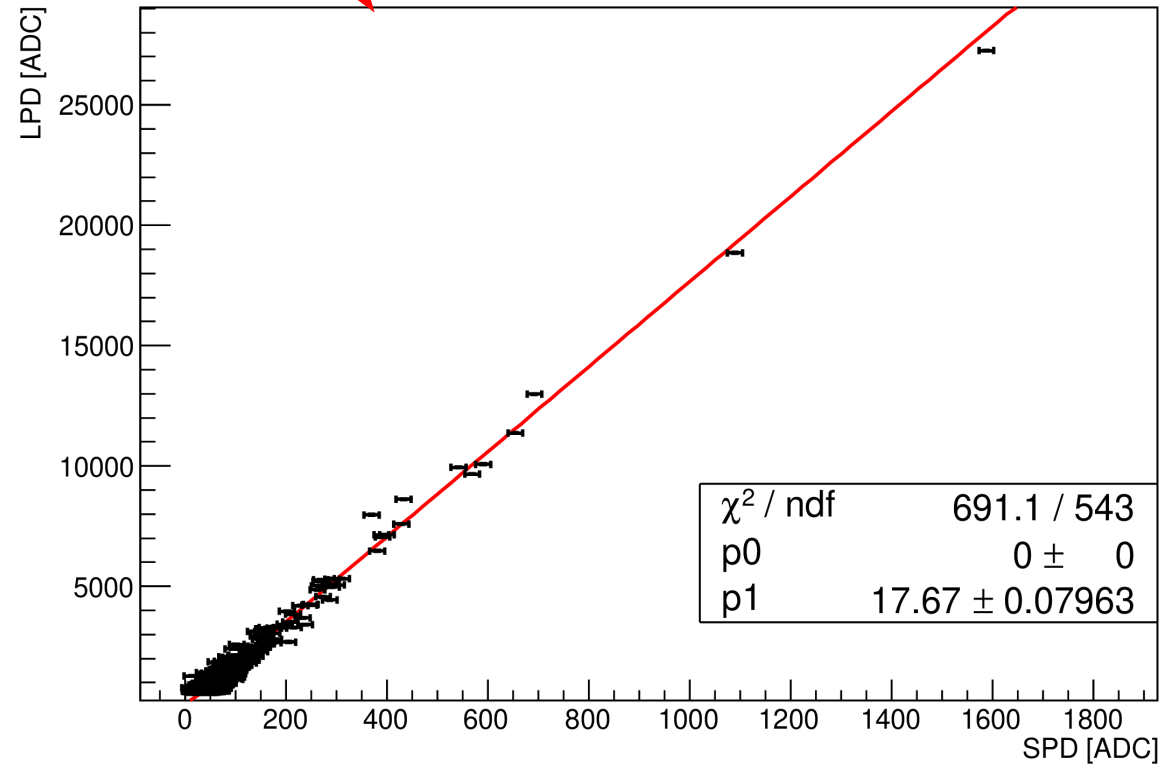
C2



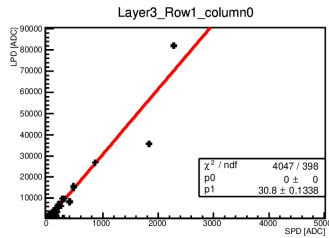
C1



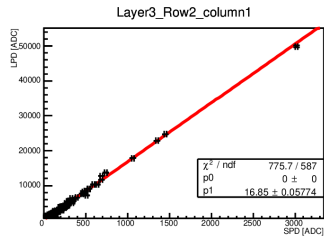
Layer3_Row1_column2



A1



A2



Range dinamico

Stima brutale!

Considerando un rapporto tra i segnali di LPD e SPD di circa 20, quanto deve essere la trasmittanza ottica del filtro posto davanti a SPD per arrivare a saturazione solo con rilasci di centinaia di TeV?

Saturazione SPD = Saturazione con trasmittanza 100% / Trasmittanza

Tasmittanza	100%	2%	1.5%	1%
Saturazione	~4 TeV	~200 TeV	~270 TeV	~400 TeV
SNR SPD alla saturazione del LPD (190 GeV)	~2100	~40	~30	~20

SPD alla saturazione di LD = $(190 \text{ GeV} / 30 \text{ MeV}) * \text{MIP}(\text{SPD trasmittanza } 100\% [\text{ADC}])$
*Trasmittanza / (Larghezza piedistalli SPD ~25 ADC)

MIP(SPД trasmittanza 100%) ~ 8.5 ADC

Summary rapporto LPD/SPD

Cube	Labec (peak)	Labec (scatter plot)	Careggi (peak)	Careggi (scatter plot)	Lab showers (scatter plot)
C1 central	22.4 +- 1.1	22.0 +- 0.7	19.4 +- 0.1	19.4 +- 0.1	17.7 +- 0.8
C2 central	20.6 +- 0.4	20.0 +- 0.5	18.8 +- 01	18.8 +- 0.6	18.8 +- 1.1
C2 SPD	19.0 +- 1.2	18.8 +- 0.5	\\	\\	\\
C2 LPD	21.0 +- 1.1	20.8 +- 0.7	\\	\\	\\
A2	//	\\	17.6 +- 0.1	17.55 +- 0.05	16.8 +- 0.3
A1	//	\\	????	????	30.80 +- 1.7