Polar QuEEEst:
Test Scintillatore e SiPM

Marzo 2018

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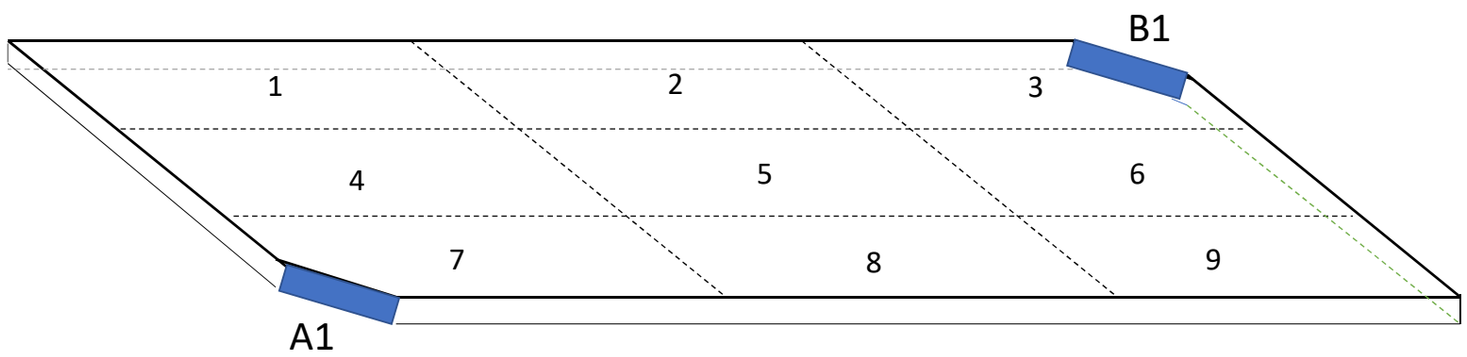
Setup

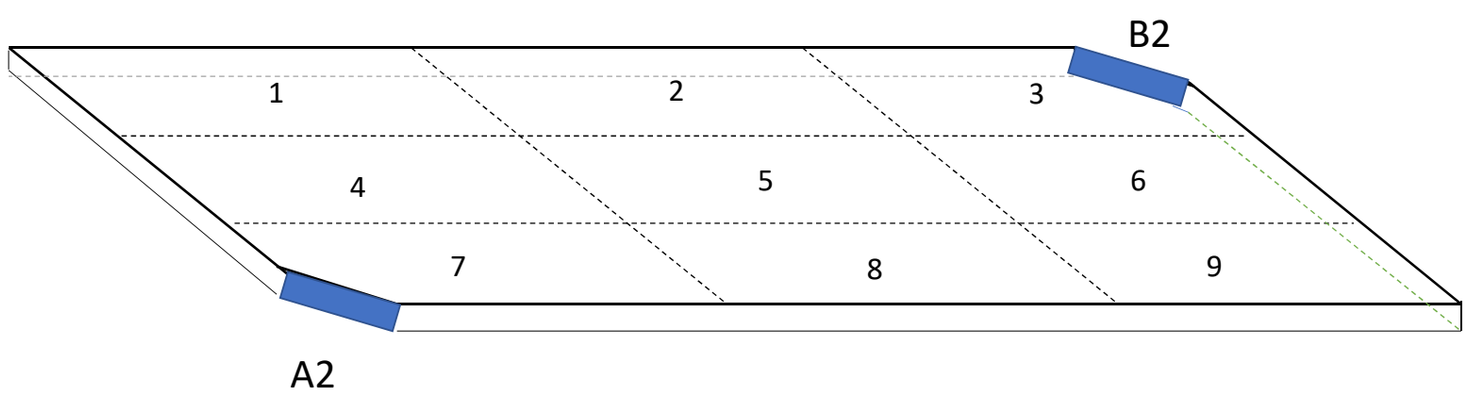
1- 4 SiPM + 2 Schede Fornt End con DAC

2- Lastre (quelle verniciate non rispondono alle nostre esigenze…)

==> Tolta Vernice, lucidate e ripetute le misure di efficienza con alcune modifiche al trigger (4 Scintillatori + 4 PMT per il trigger)

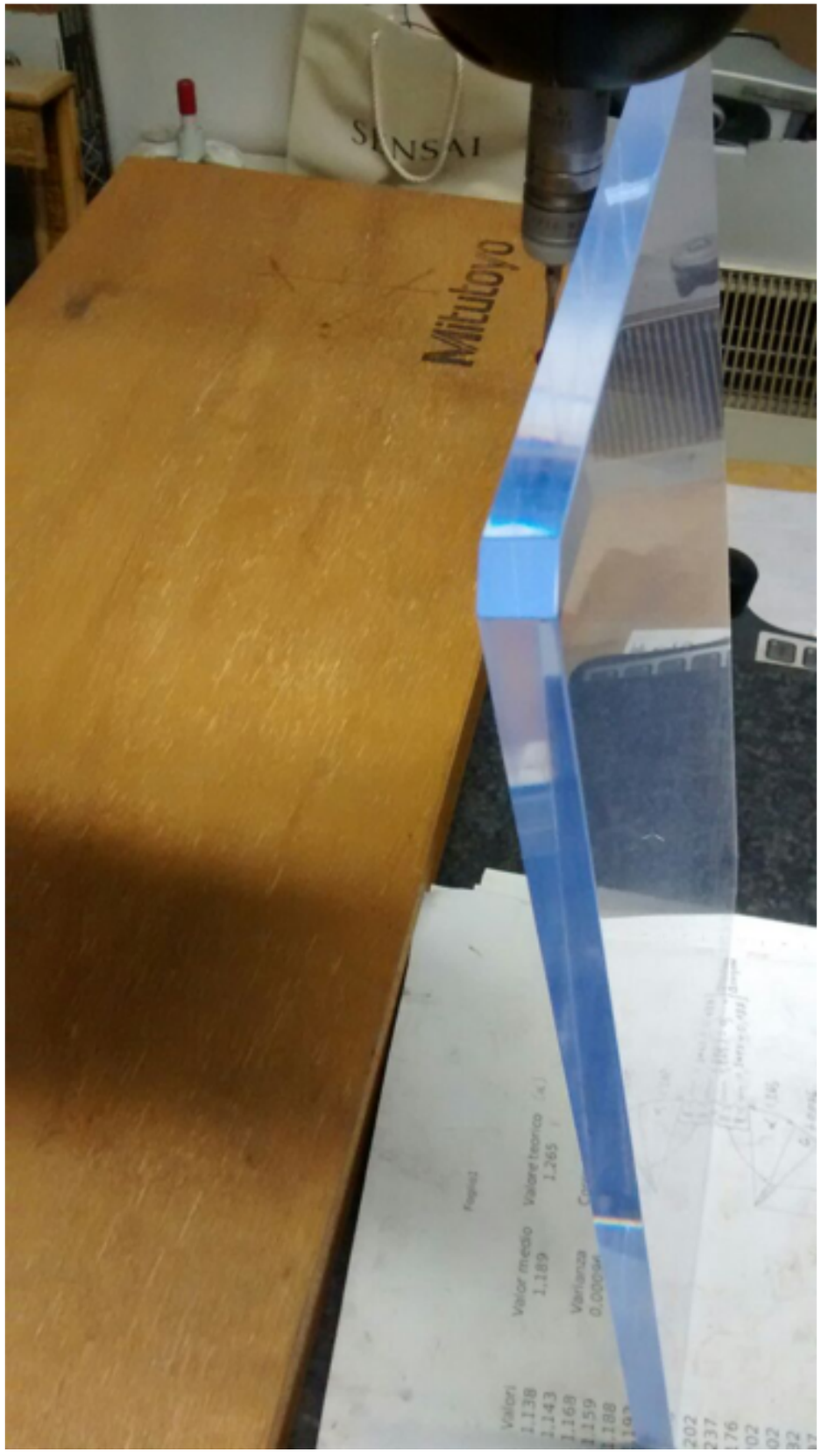
a- test efficienza vs. posizione trigger esterno
b- test pattern di trigger con i 4 SiPM





RISULTATI

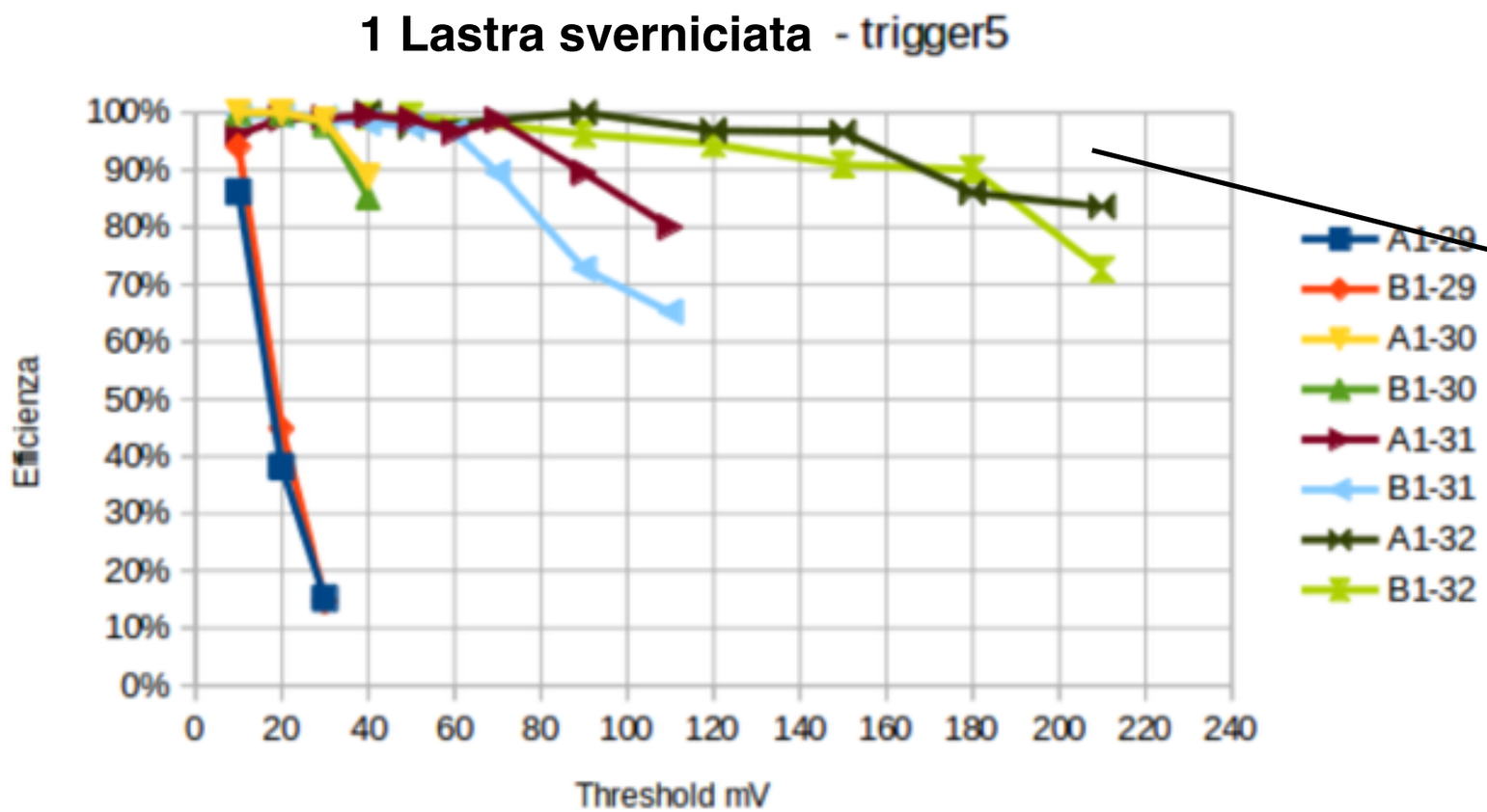
Scintillatore



1- Vernice tolta da circa 14 lastre
2- 4 lastre pronte (lucidate in casa e con angoli smussati)
3- Visita in ditta per appaltare la lucidatura (buon risultato, in attesa dell'offerta)

La lastra lucidata in ditta è attualmente in test neò setup.

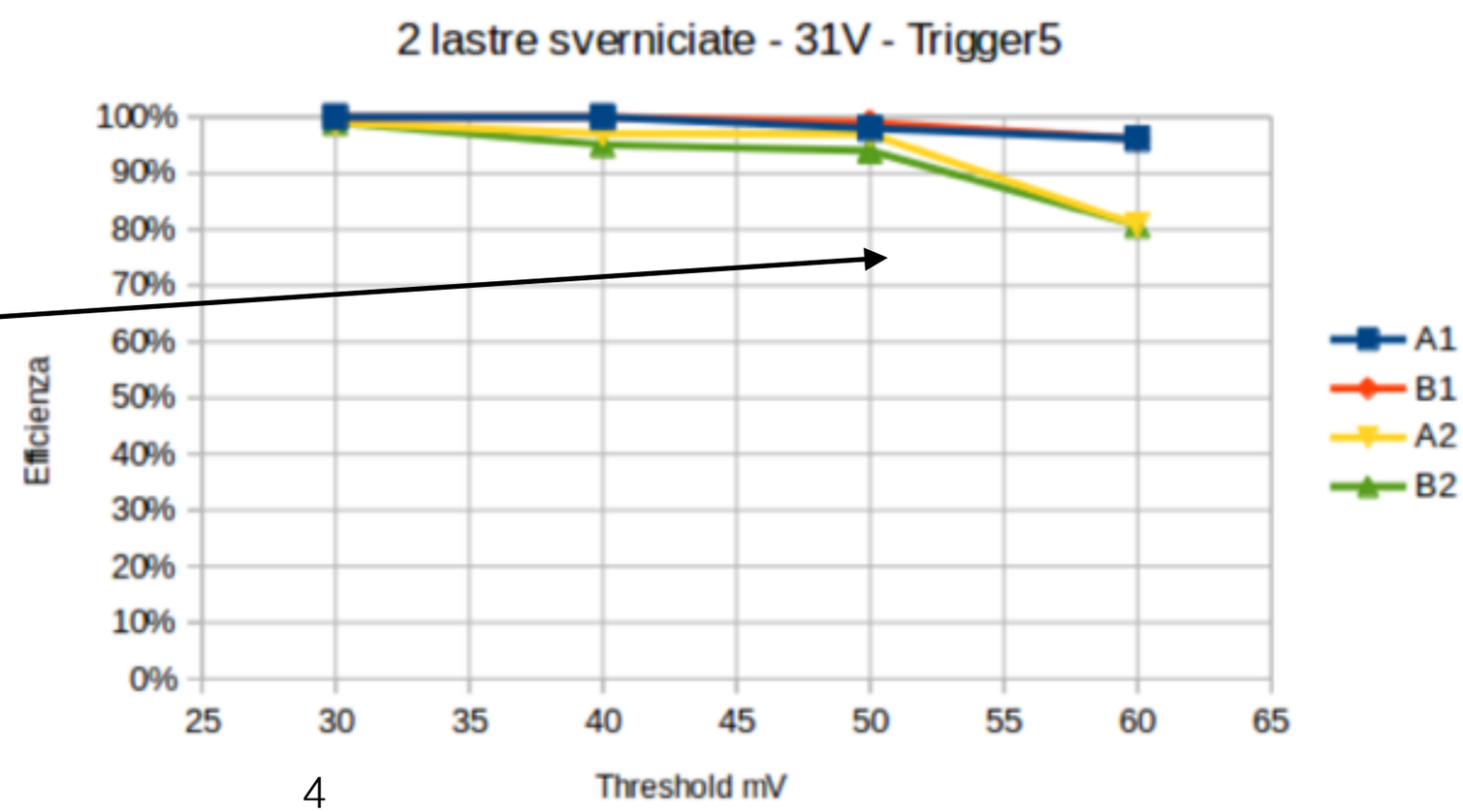
Efficienza Singoli SiPM vs. Vbias Threshold & Trigger Pos



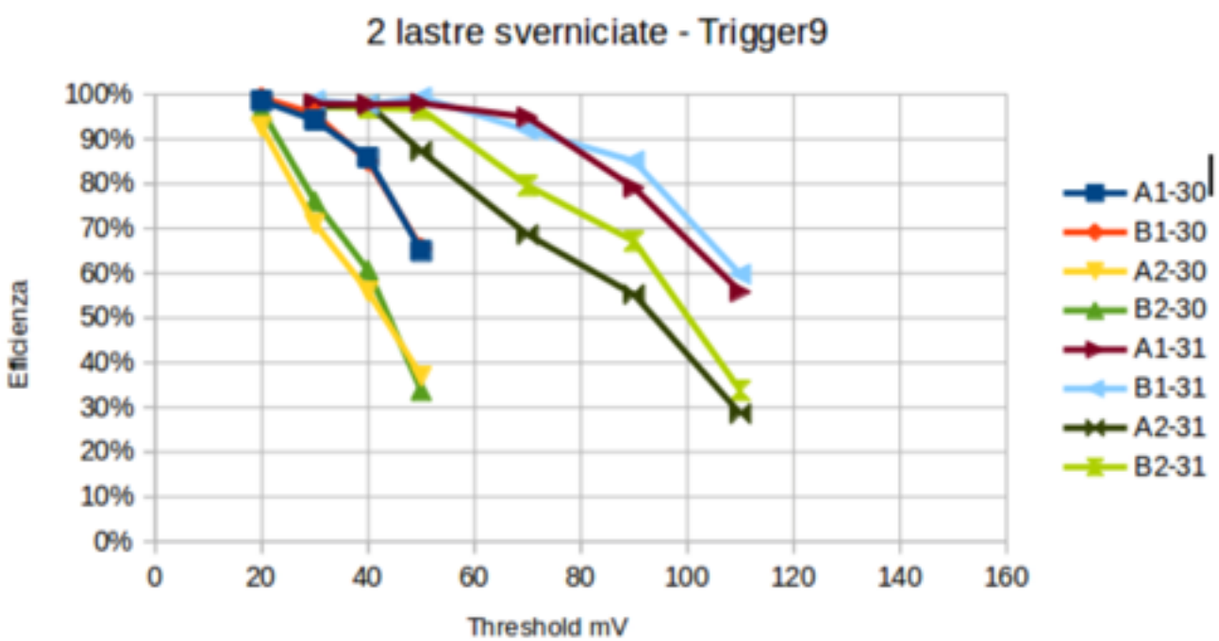
-Indicazione del V_{bias} (NB quello riportato è V_{bias}+2 V)

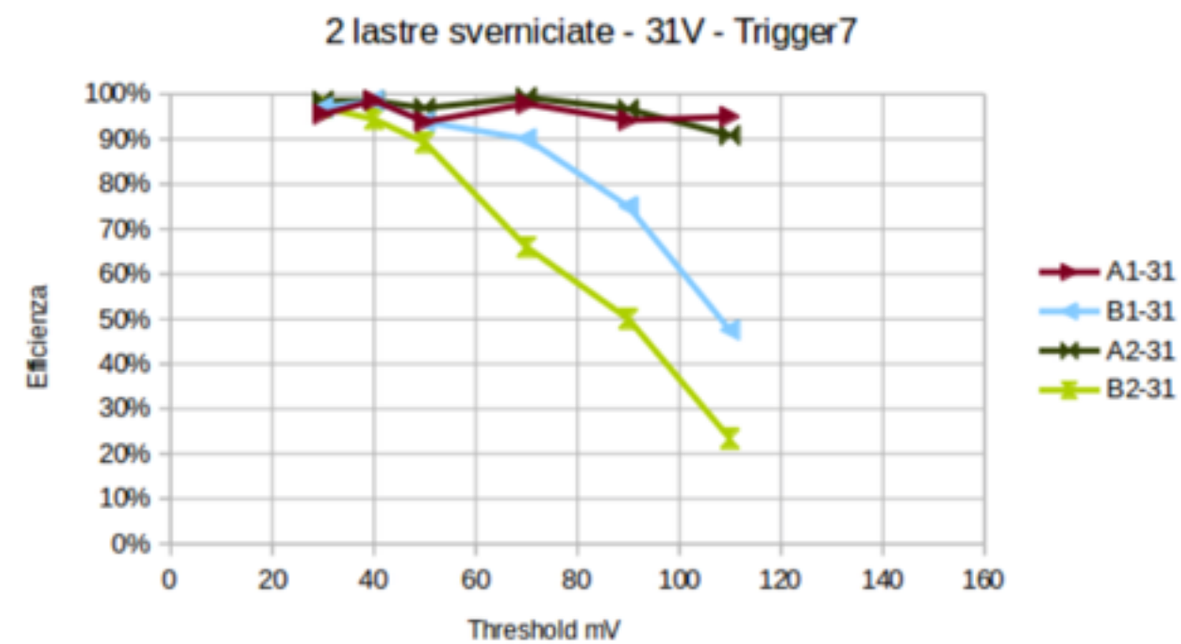
-Non riportata ma contemporaneamente misura con lastra verniciata dà Eff al meglio tra 40% e 60%

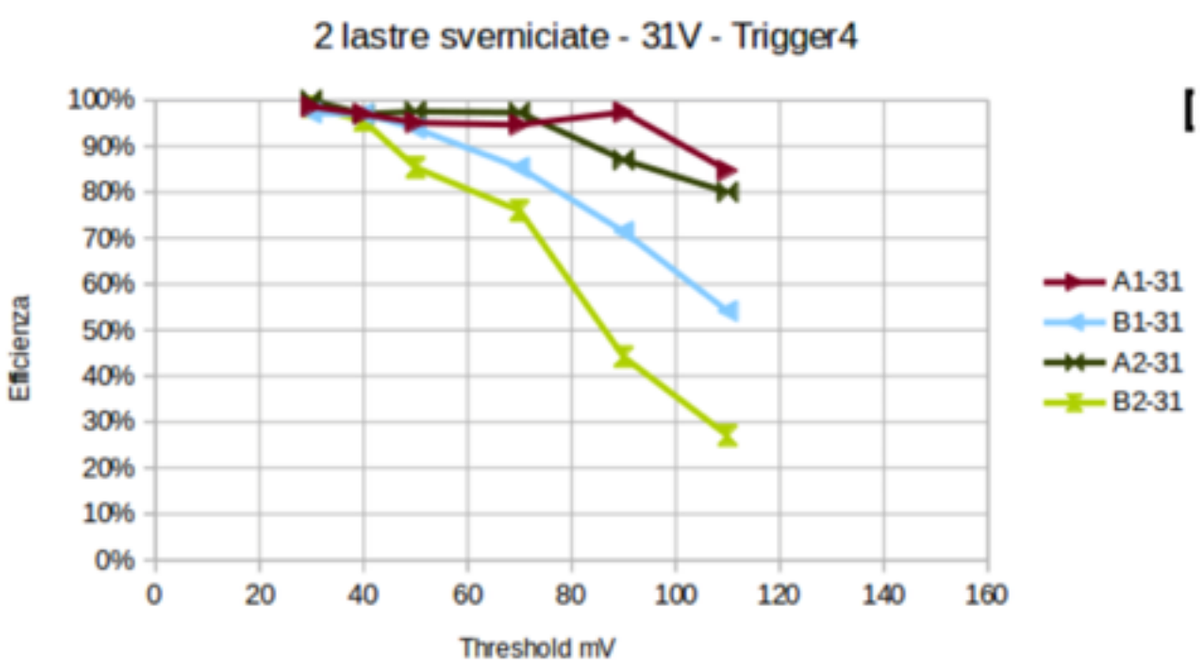
Risultati migliori ma qualche sospetto sulla lucidatura homemade

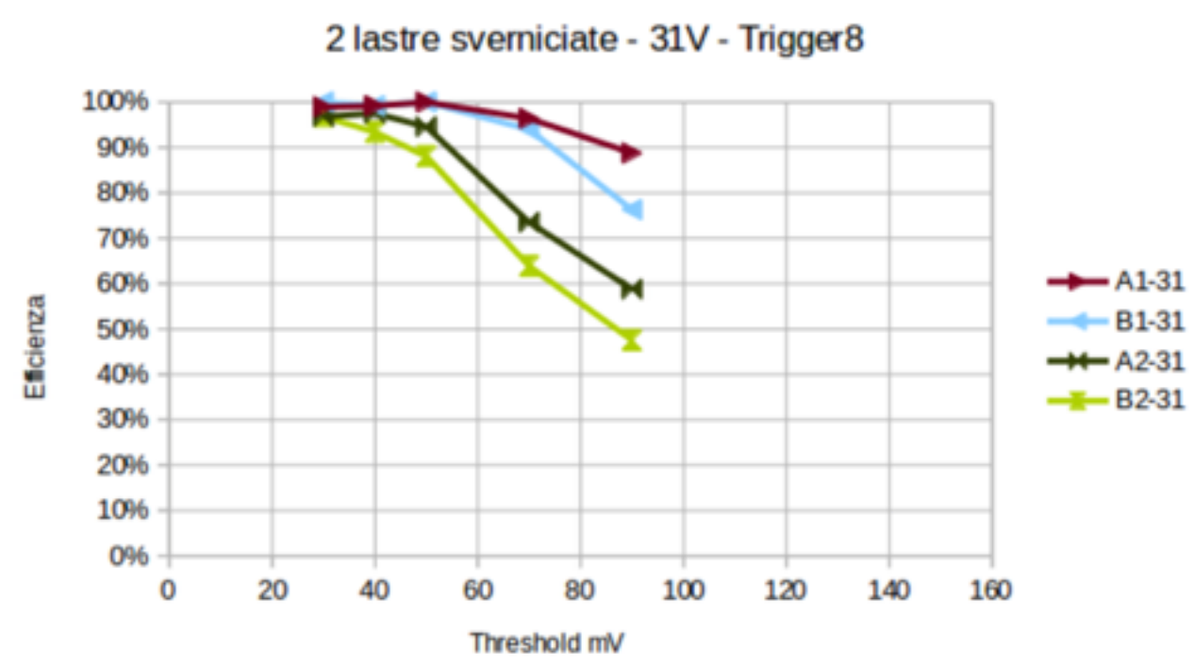


Efficienza Singoli SiPM vs. Vbias Threshold & Trigger Position

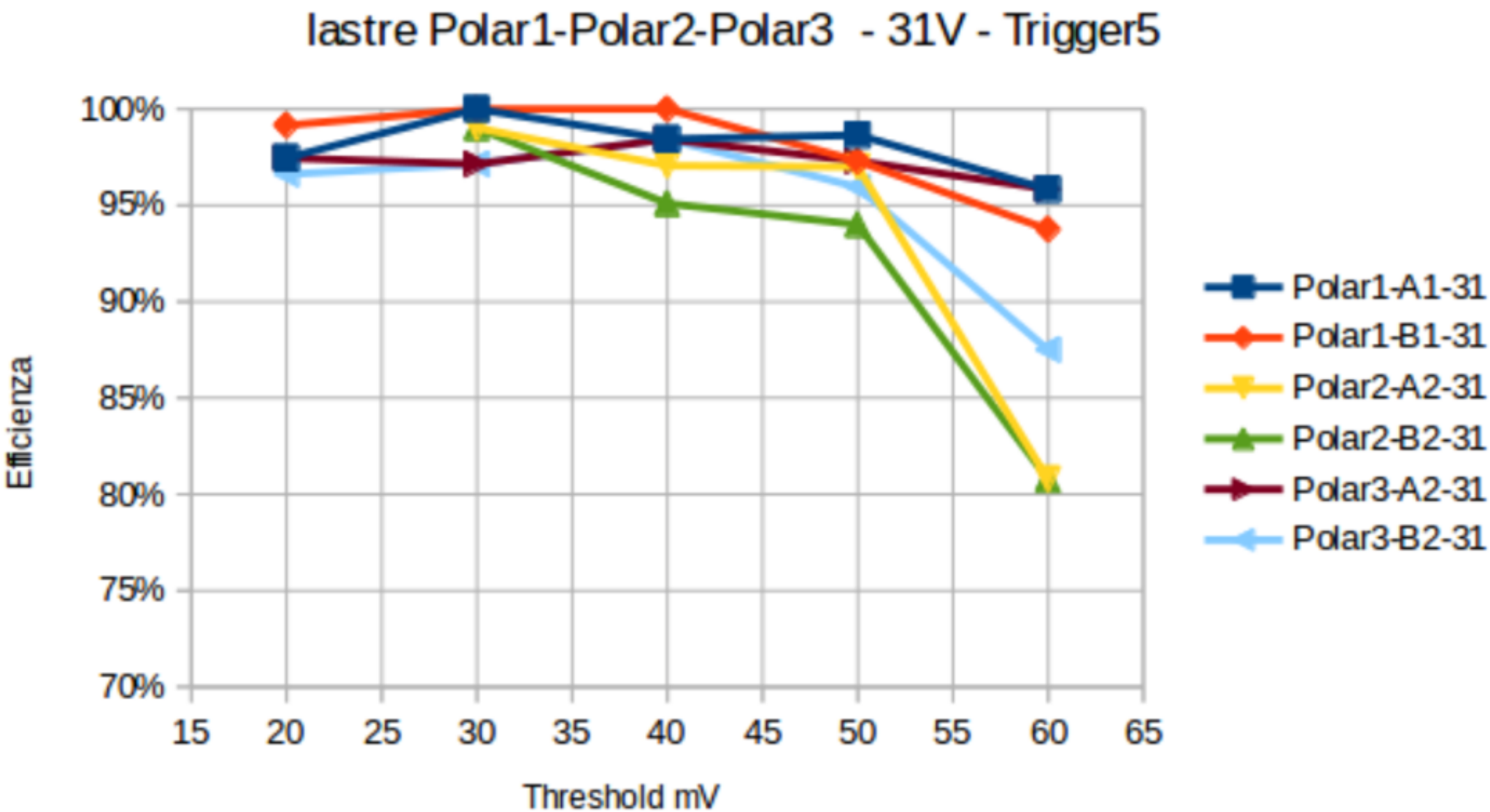






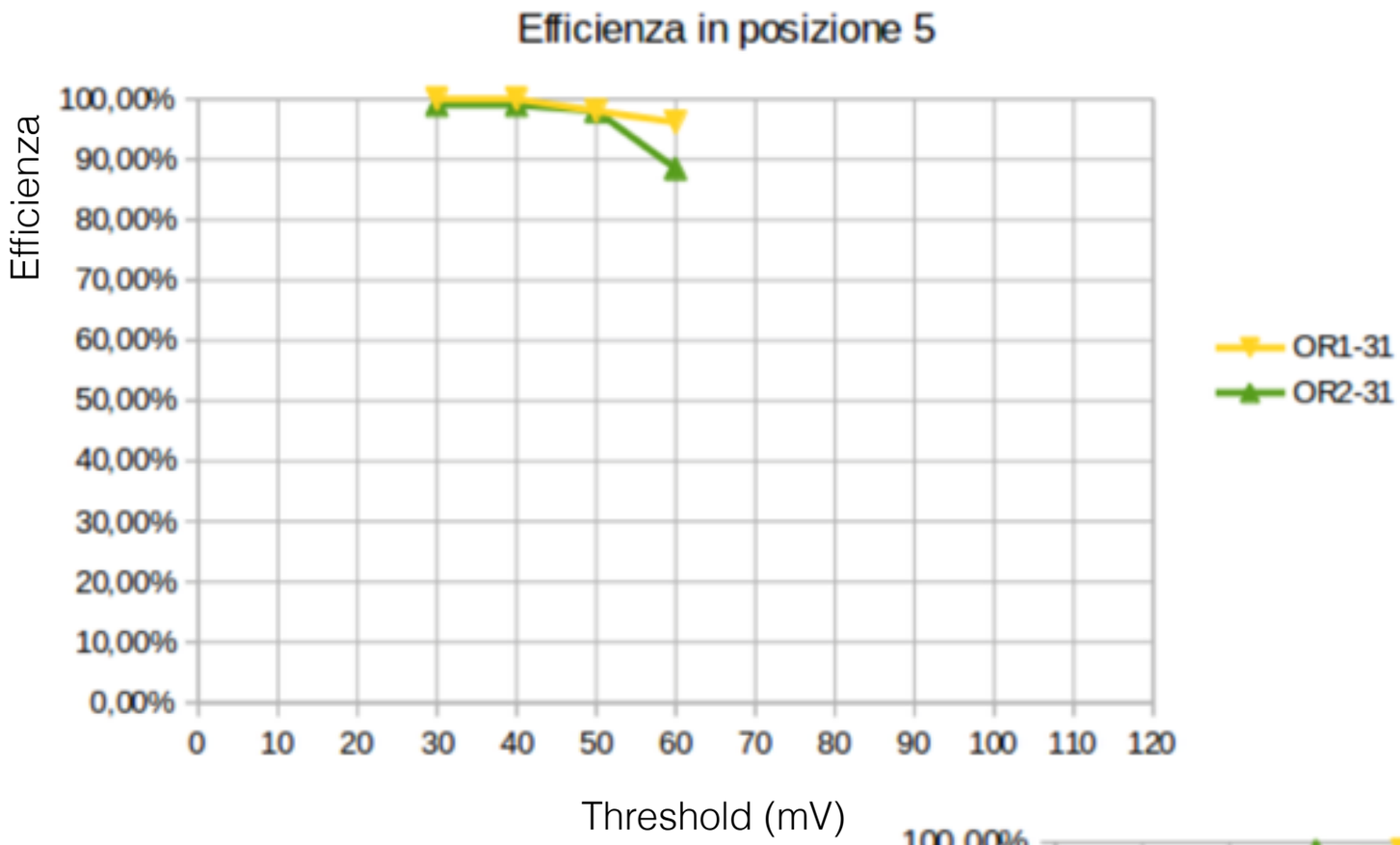


Efficienza Singoli SiPM vs. Vbias Threshold & Trigger Position & nuova lastra

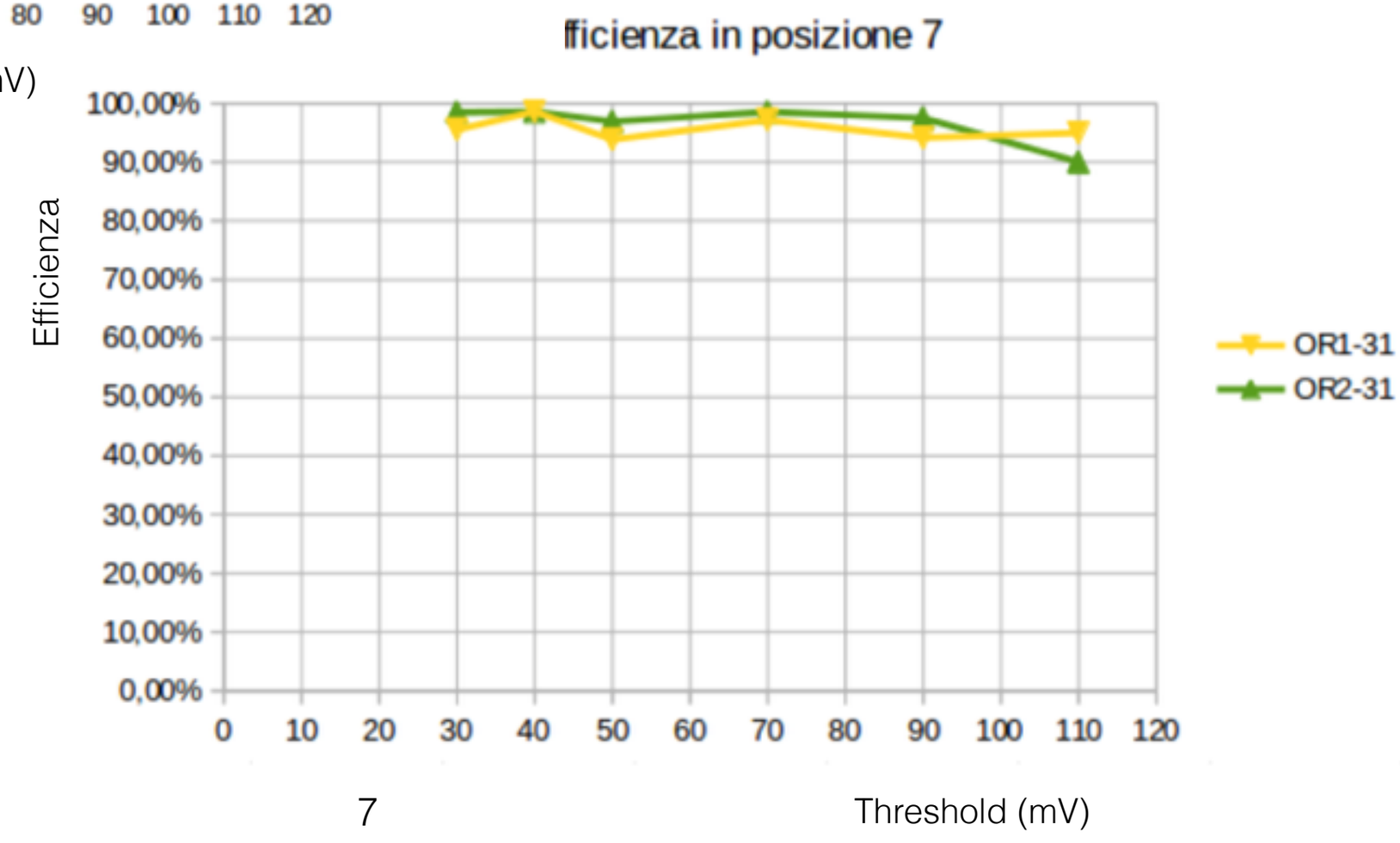


Polar1-Polar2-Polar3 sono i nomi dati a 3 lastre di scintillatore

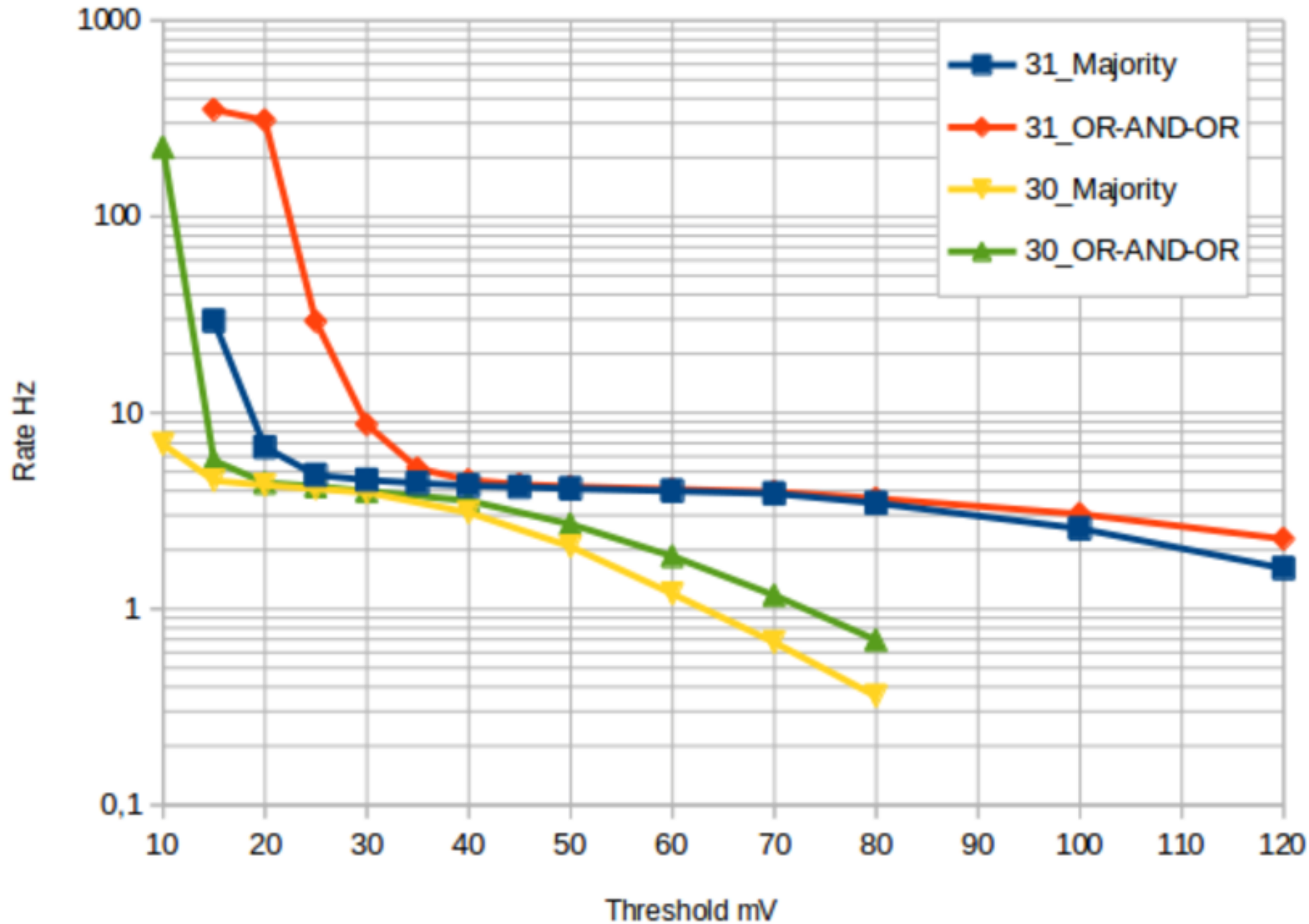
Efficienza in OR



Studiata l'efficienza in OR:
OR1= A1-OR-B1
OR2= A2-OR-B2



Test Pattern di Trigger



Conclusioni e prossimi step

1- Senza la vernice riflettente efficienza prossima al 100%(*) in tutte le posizioni (per soglie fino a 40-50 mV).

2- Vbias 31 V sembra la tensione migliore

3- Ulteriori scan in soglia e test di pattern di trigger con più di due lastre per determinare il punto di lavoro

4- Preparazione di tutte le lastre di scintillatore

(*) Possibile percentuale di inefficienza legata al VME…

extra

RATES

3 – Misure preliminari di rate

Il rate in Hz in singola dei 4 SiPM è:

	A1	B1	A2	B2
31V 30mV	3533	1783	11500	7100
31V 40mV	717	250	2633	1000
31V 50mV	167	50	450	167

Test beta di logica di trigger

31V 30mV	A1 OR B1	5 Khz
	A2 OR B2	4,5 Khz
	(A1 OR B1) AND (A2 OR B2)	Circa 20 Hz
31V 40mV	A1 OR B1	900 Hz
	A2 OR B2	800 Hz
	(A1 OR B1) AND (A2 OR B2)	Circa 6 Hz
31V 50mV	A1 OR B1	200 Hz
	A2 OR B2	150 Hz
	(A1 OR B1) AND (A2 OR B2)	Circa 4 Hz