

SHORT SUMMARY OF OUR BEAM TEST DATA

DEC 1, 2005

JS

Beam Test data set (Jul-Nov):

- 14 runs
- 4M triggers
- ~200k good single-track events

included in that (Nov 16-18):

- 2.5 runs with narrow beam spot
- 1.1M triggers
- 82k good single-track events

Web page summarizes available runs.

DAQ files converted to ROOT ntuples,
available on linux cluster, backed up
to EB NFS disks.

data set	position	date	run	triggers	comments
July 2005: first run period					
run 1	4	Jul 22, 2005	20050722_1917	64,094	beam starts after ~44,000 triggers
		Jul 23, 2005	20050722_2136	100,000	smooth running
run 2	4	Jul 25, 2005	20050723_0053	8,264	Note that all of run 1 has fake data in SLAC ADC slot 5.
		Jul 26, 2005	20050725_2330	100,000	smooth running
run 3	1	Jul 26, 2005	20050726_0605	17,807	
			20050726_0649	39,600	
			20050726_0940	100,000	
			20050726_1246	83,034	
run 4	7	Jul 26, 2005	20050726_1505	100,000	Tuning of beam spot
			20050726_1842	29,043	
run 5	7	Aug 15, 2005	20050726_1949	42,830	very brief beam, ends after 4100 triggers; 24 tracks in start counter.
			August 2005: second run period		
run 6	6	Aug 17, 2005	20050815_1414	34,775	beam starts after ~25,000 triggers; beam tuning.
			20050815_1657	100,000	still beam tuning
			20050815_1949	4,834	still beam tuning, beam ends after ~4000 triggers
		Aug 18, 2005	20050817_1215	30,642	
			20050817_1735	100,000	
			20050817_1609	43,288	beam scan but some useful events
			20050817_2022	78,610	
run 7	1	Aug 19, 2005	20050817_2309	100,000	
			20050818_0211	100,000	
			20050818_0458	59,984	
		Aug 20, 2005	20050819_1009	100,000	
			20050819_1440	53,672	
			20050819_1737	100,000	
			20050819_2055	100,000	
run 8	2	Aug 20, 2005	20050819_2341	100,000	
			20050820_0228	100,000	
run 9	3	Aug 20, 2005	20050820_0527	97,386	
			20050820_0905	100,000	
run 10	5	Aug 20, 2005	20050820_1154	19,203	
			20050820_1256	100,000	
run 11	4	Aug 20, 2005	20050820_1649	94,473	
			20050820_1953	100,000	
		Aug 21, 2005	20050820_2252	100,000	
			20050821_0200	100,000	
run 12(a)	1	Nov 15, 2005	20050821_0503	97,558	
			November 2005: third run period		
run 12(b)	1	Nov 15, 2005	20051115_1829	42,478	beam starts after ~5000 triggers. Note that the SLAC ADCs were mirroring during most of run 12.
			20051115_2055	94,072	beam ends after ~9000 triggers
		Nov 16, 2005	20051116_1634	100,000	beam tuning
			20051116_1923	31,369	beam tuning towards narrow beamspot (end of run 12(a))
run 13	3	Nov 17, 2005	20051116_2016	100,000	Start of run 12(b), new narrow beamspot in Z
			20051116_2307	100,000	
			20051117_0155	47,088	beam ends after 42,300 triggers
run 14	5	Nov 17, 2005	20051117_1400	100,000	some tuning in X early on, then stable running
			20051117_1735	53,666	ended to move to next bar position
		Nov 18, 2005	20051117_1939	100,000	
			20051117_2226	100,000	
run 12(a)	1	Nov 18, 2005	20051118_0113	100,000	
			20051118_0405	100,000	
			20051118_0652	61,727	
			20051118_0907	14,814	beam starts after 6,500 triggers
run 14	5	Nov 18, 2005	20051118_0932	65,829	
			20051118_1122	94,738	
			20051118_1406	17,443	
			20051118_1518	23,528	low intensity and rate during recovery from klystron failure

BEAM TUNING: HODOSCOPE HIT MAP

- all triggers (top)
- single hodoscope hits (bottom)

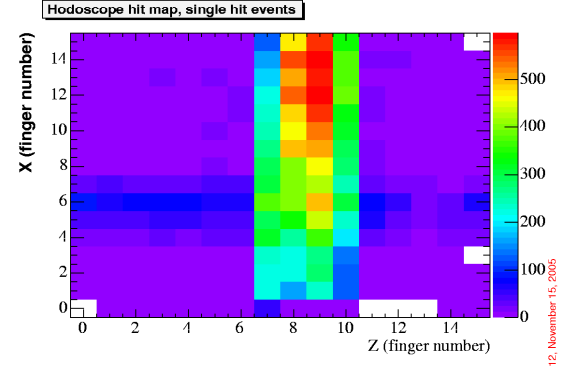
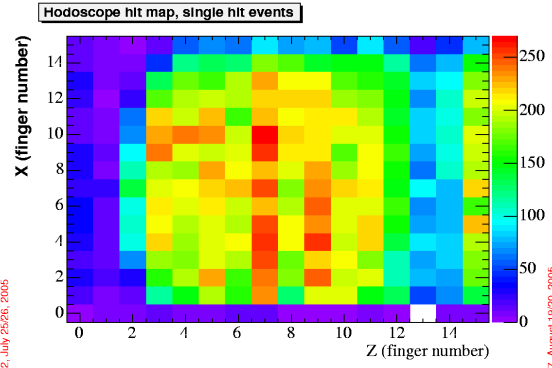
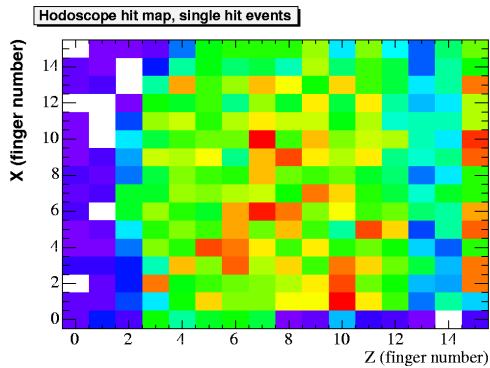
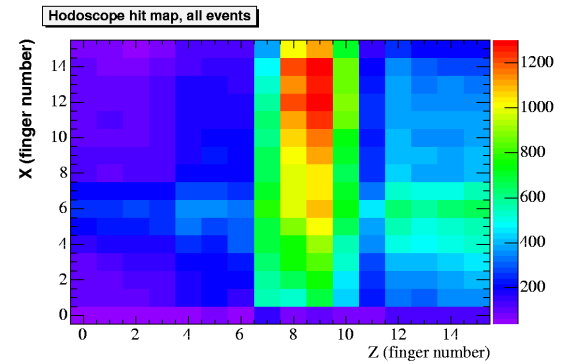
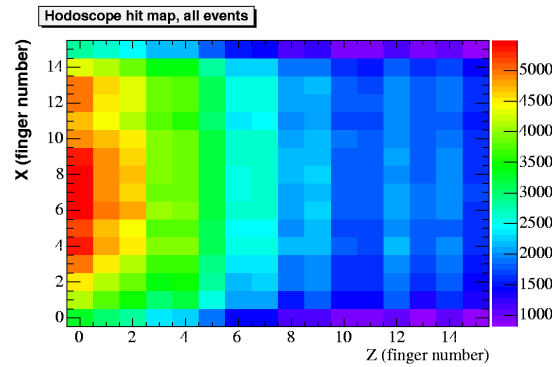
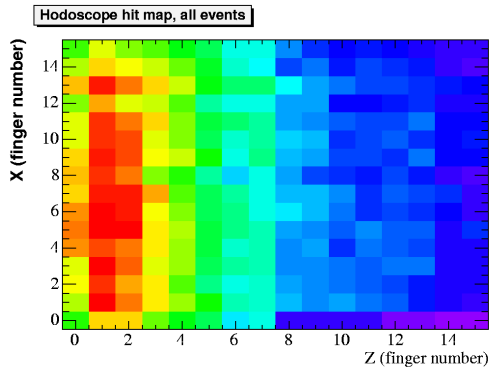
Run 2, July

Run 7, August

Run 13, November

“pipe-filling” beam, lots of secondary tracks, high multiplicity,

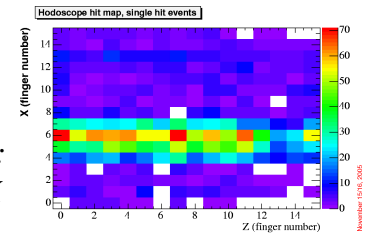
much effort to focus beam, success with Q38 narrow beam in Z, still wide in X



One finger covers

- in Z: 2.2mm
- in X: 2.1mm

Tune in run 12a:
better focus in X

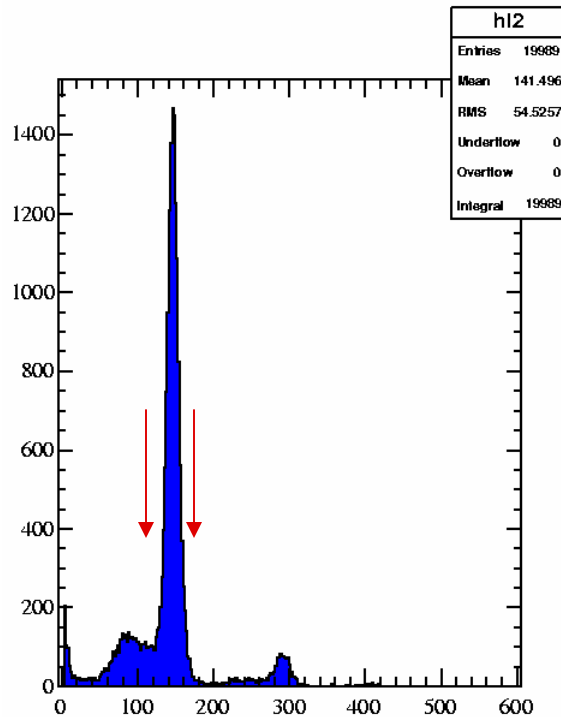


BEAM TUNING: LEAD GLASS

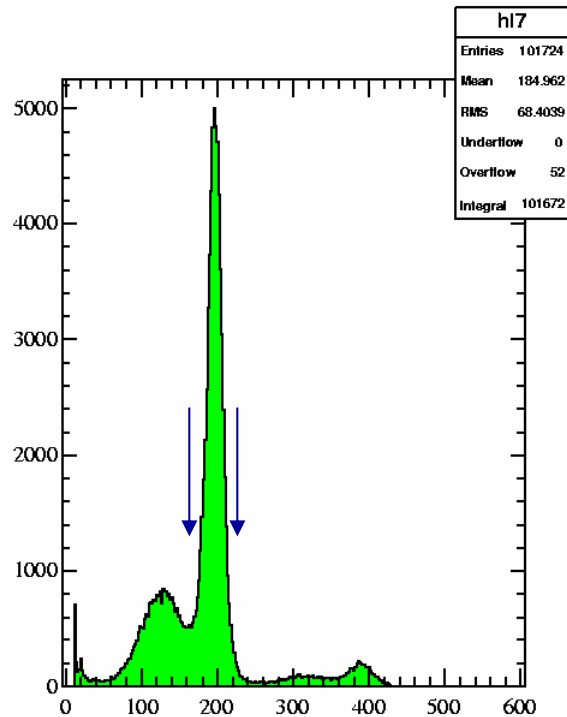
single tracks required in hodoscope and Cherenkov counter, use lead glass to select single electrons

Run 2, July

secondary tracks, scattered particles, pions in “hump”
~2-3% of triggers are good single-track events

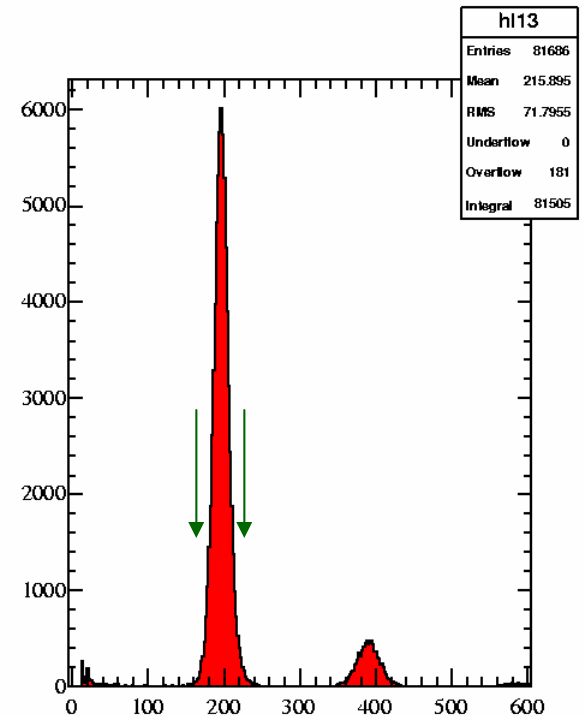


Run 7, August

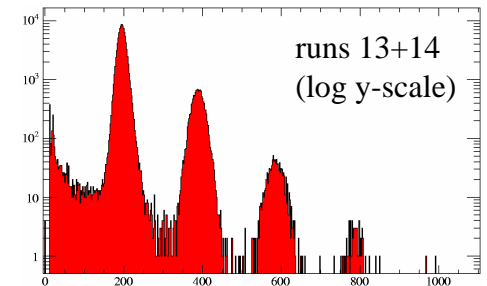


Run 13, November

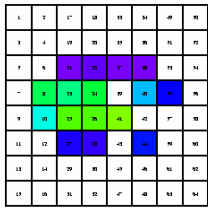
much cleaner electron beam, 2e, 3e, 4e peaks
~8% of triggers are good single-track events



Charge in lead glass ADC
[counts]



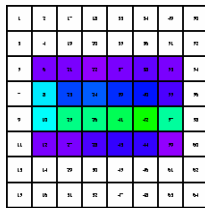
Focusing DIRC Prototype Occupancy Run 2, July 25/26, 2005



Slot 2

Hamamatsu

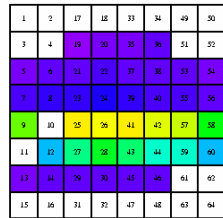
CFD 3 CFD 4



Slot 3

Hamamatsu

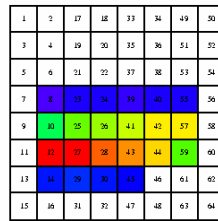
CFD 5 CFD 6



Slot 4

Burle

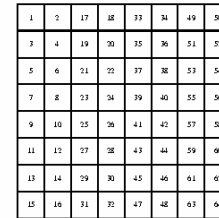
CFD 7 CFD 2



Slot 5

Burle

CFD 9 CFD 10



Slot 6

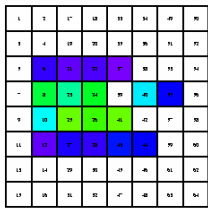
Burle

CFD 11 CFD 12

Run 2

104 good Phillips TDC channels

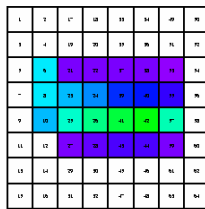
Focusing DIRC Prototype Occupancy Run 7, August 19/20, 2005



Slot 2

Hamamatsu

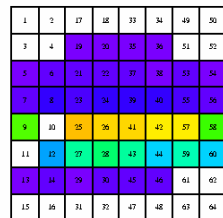
CFD 3 CFD 4



Slot 3

Hamamatsu

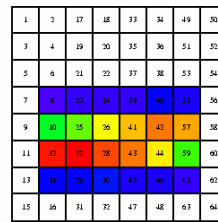
CFD 5 CFD 6



Slot 4

Burle

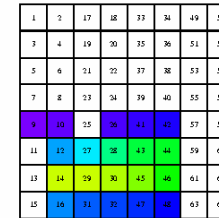
CFD 7 CFD 2



Slot 5

Burle

CFD 9 CFD 10



Slot 6

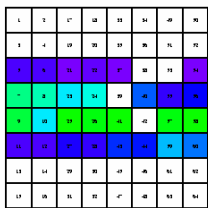
Burle

CFD 11 CFD 12

Run 7

125 good Phillips TDC channels

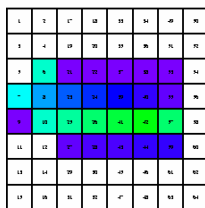
Focusing DIRC Prototype Occupancy Run 13, November 17/18, 2005



Slot 2

Hamamatsu

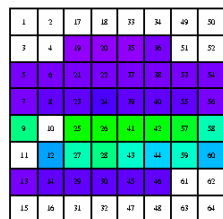
CFD 3 CFD 4



Slot 3

Hamamatsu

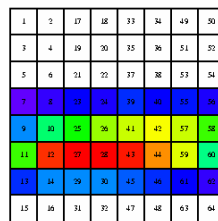
CFD 5 CFD 6



Slot 4

Burle

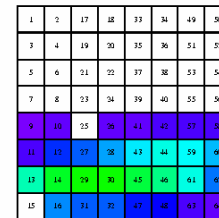
CFD 7 CFD 2



Slot 5

Burle

CFD 9 CFD 10



Slot 6

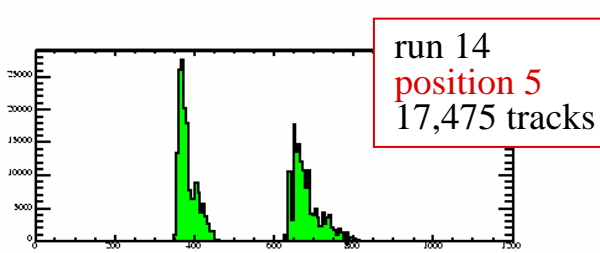
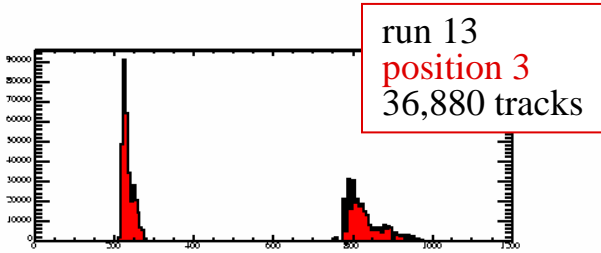
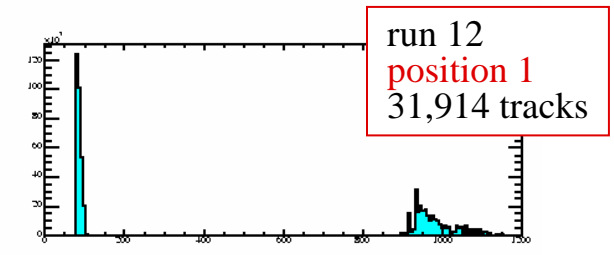
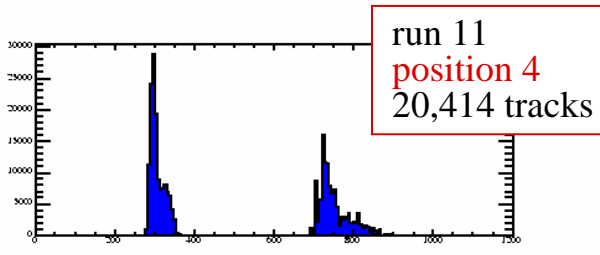
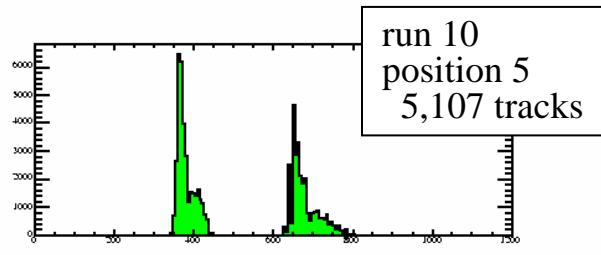
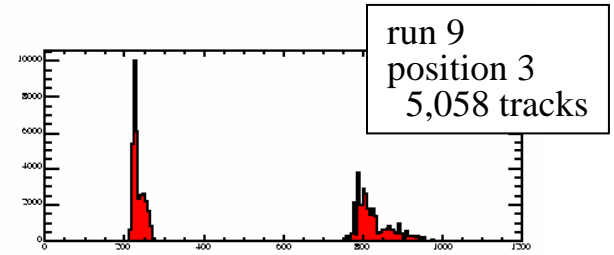
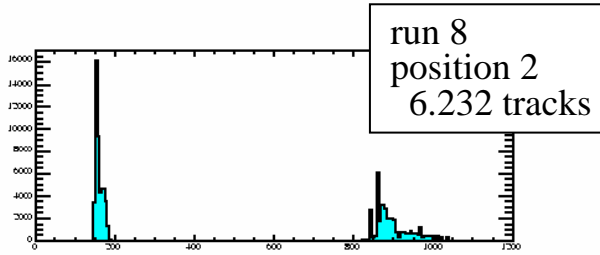
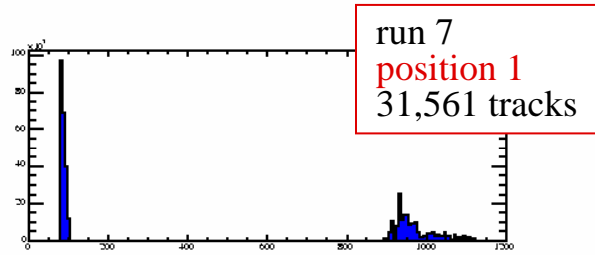
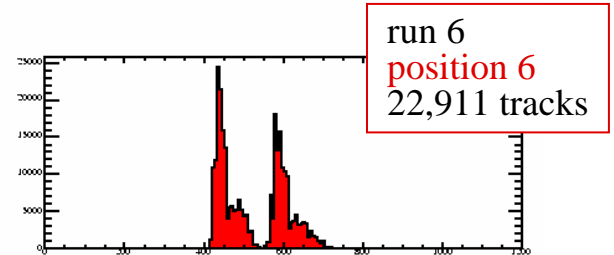
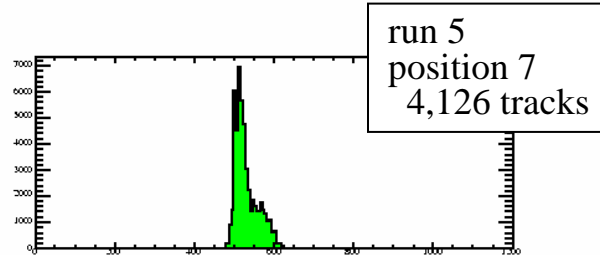
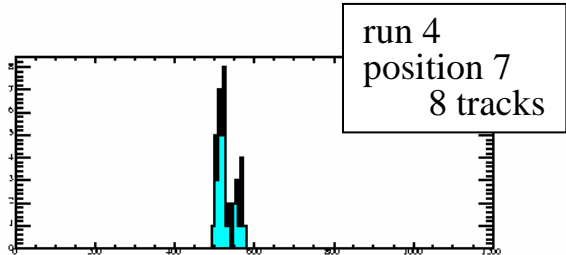
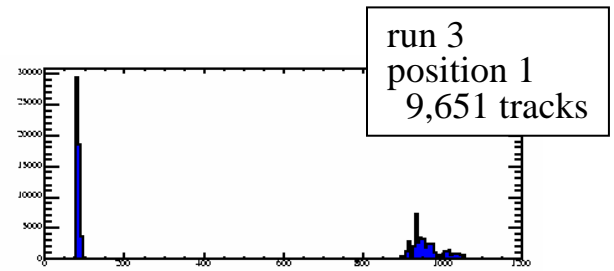
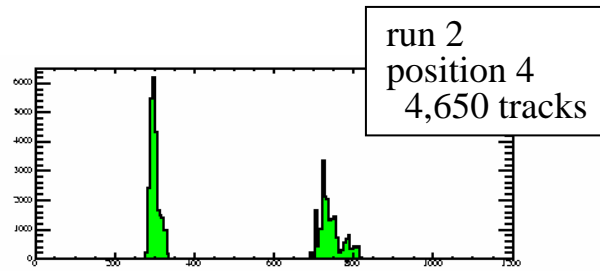
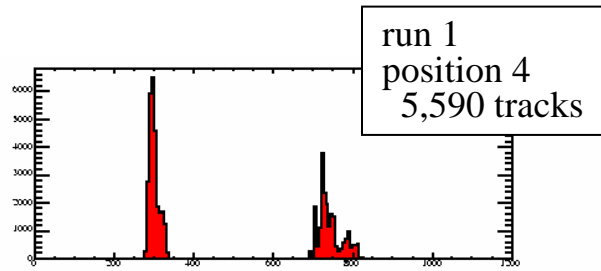
Burle

CFD 11 CFD 12

Run 13

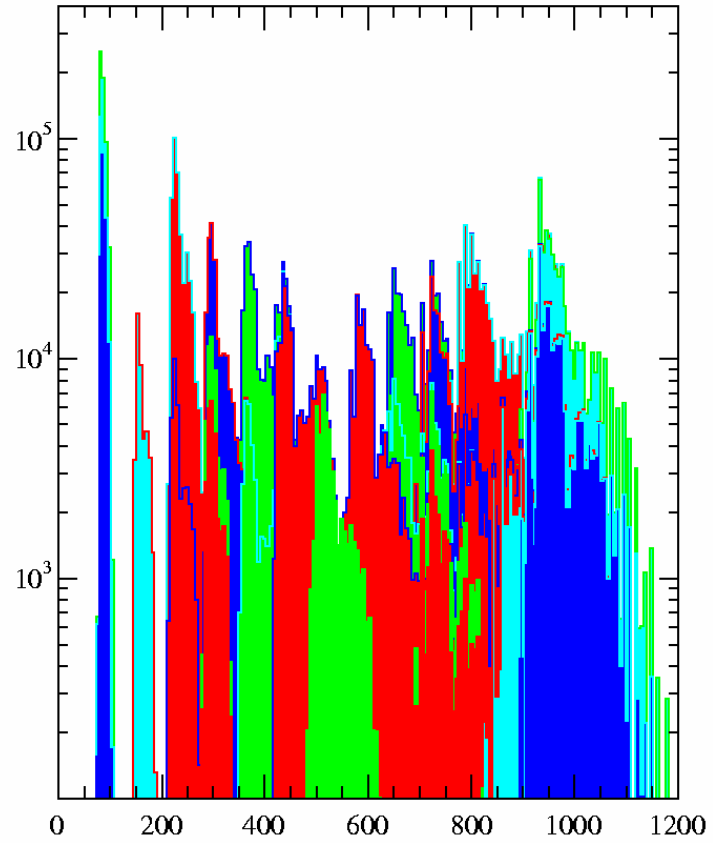
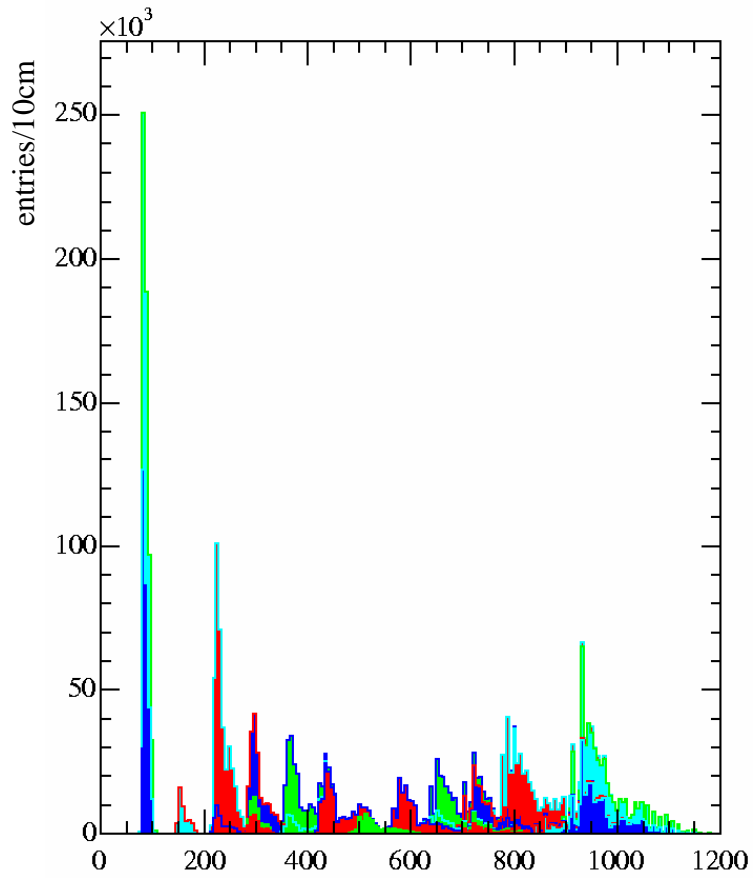
155 good Phillips TDC channels

PHOTON PATHLENGTH IN BAR [CM]



Most of the data taken
in positions 1, 3, 4, 5, 6

Photon pathlength coverage for all runs combined



Photon Pathlength
in bar [cm]

Good continuous coverage from 250-1100cm.

Same plot for small
beam spot data only

