

Update of parameters for modelling,
paper model results for ROBIns

Jos Vermeulen, 3 November,
corrected : 4 November

Number of ROBs, size of event fragments :

Pixels : *84 ROBs * 80* bytes (low luminosity), *800* bytes (high luminosity)

SCT : **92 ROBs * 250** bytes (low luminosity), **1600** bytes (high luminosity)

TRT : 256 ROBs * **750** bytes (low luminosity), **1000** bytes (high luminosity)

Em calorimeter : *760 ROBs * 1800 bytes* (was : 738 ROBs * 2000 bytes)

Hadron Calorimeter : *98 ROBs * 1800 bytes* (was 2000 bytes; for the tile calorimeter only 900 bytes can be used, here the maximum determined by the LAr hadron calorimeter is used)

μ -trigger : 48 ROBs * 380 bytes

μ -precision : 192 ROBs * **800** bytes

Maximum rate and volume of data to be sent per ROBIN

Low luminosity :

	<u>40 kHz LVL1</u>	<u>75 kHz LVL1 (scan not scaled)</u>	
-> LVL 2 :	11.9 kHz	13.6 kHz	(Pixels)
	8.1 MByte/s	8.5 MByte/s	(TRT) : no RoIs for cal + μ detector by scan
-> EB :	2.0 kHz	3.8 kHz	
	3.7 MByte/s	6.9 MByte/s	(calorimeters)
Total output :	13.9 kHz	17.4 kHz	
	9.7 MByte/s	13.1 MByte/s	: no RoIs for cal + μ detector by scan
	10.3 MByte/s	16.3 MByte/s	: 2.0 RoIs for cal + μ detector by scan

Maximum rate and volume of data to be sent per ROBIN

DAQ-1 design

Low luminosity :

	40 kHz LVL1	75 kHz LVL1 (scan not scaled)	
-> LVL 2 :	28.3 kHz	31.9 kHz	(Pixels)
	19.6 MByte/s	20.2 MByte/s	(TRT) : no RoIs for cal + μ detector by scan
-> EB :	2.0 kHz	3.8 kHz	
	3.7 MByte/s	6.9 MByte/s	(calorimeters)
Total output :	30.3 kHz	35.7 kHz	
	21.1 MByte/s	23.1 MByte/s	: no RoIs for cal + μ detector by scan
	51.5 MByte/s	57.8 MByte/s	: 2.0 RoIs for cal + μ detector by scan

Maximum rate and volume of data to be sent per ROBIN

High luminosity :

	40 kHz LVL1	75 kHz LVL1	
-> LVL 2 :	2.1 kHz	4.0 kHz	(em calorimeter)
	3.8 MByte/s	7.3 MByte/s	(em calorimeter)
-> EB :	2.0 kHz	3.8 kHz	
	3.6 MByte/s	6.9 MByte/s	(calorimeters)
Total output :	4.1 kHz	7.8 kHz	
	7.5 MByte/s	14.2 MByte/s	

Maximum rate and volume of data to be sent per ROBIN

DAQ-1 design

High luminosity :

	40 kHz LVL1	75 kHz LVL1	
-> LVL 2 :	4.5 kHz	8.5 kHz	(hadron calorimeter)
	8.2 MByte/s	15.6 MByte/s	(hadron calorimeter)
-> EB :	2.0 kHz	3.8 kHz	
	3.6 MByte/s	6.9 MByte/s	(hadron calorimeter)
Total output :	6.5 kHz	12.3 kHz	
	11.8 MByte/s	22.5 MByte/s	

Conclusion

LVL2 view requires per ROBIN at maximum

	40 kHz LVL1	75 kHz LVL1	
-> LVL2 :	12 kHz	14 kHz	
	9 MByte/s	10 MByte/s :	2.0 RoIs for cal + μ detector by scan

DAQ-1 design per ROBIN at maximum

-> LVL2 :	29 kHz	32 kHz	
	48 MByte/s	51 MByte/s :	2.0 RoIs for cal + μ detector by scan

Traffic to the EB is the same for both views :

-> EB :	2 kHz	4 kHz	
	4 MByte/s	7 MByte/s	

Computer model provides results on minimum buffer sizes

(assumptions : LVL2 accept releases buffer memory,
15 MByte/s network links)

Low luminosity :

No fragmentation allowed : 38400 fragments * 1800 Bytes = 69 MByte

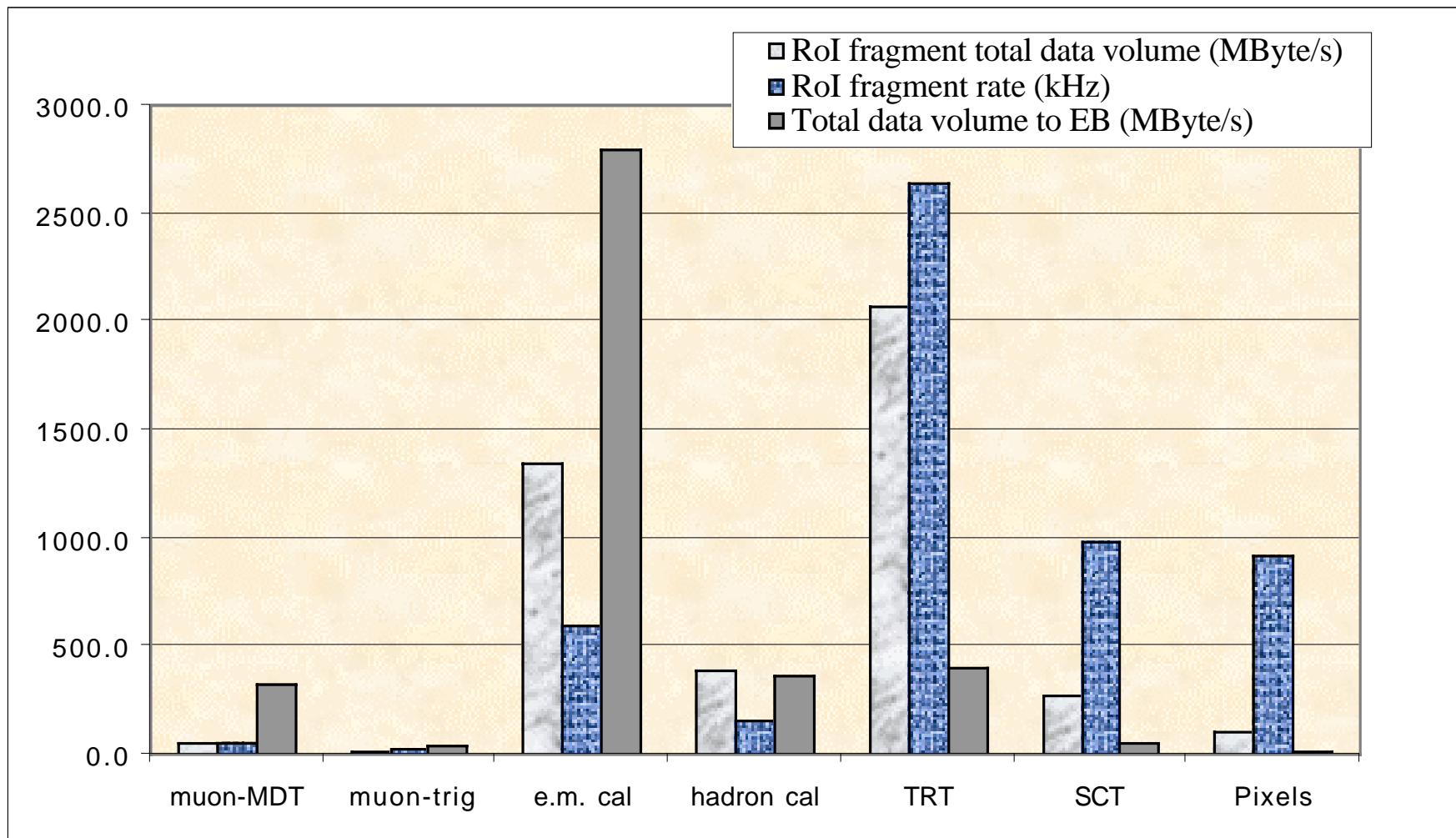
Fragmentation allowed : 3850 fragments * 1800 Bytes = 6.9 MByte

High luminosity :

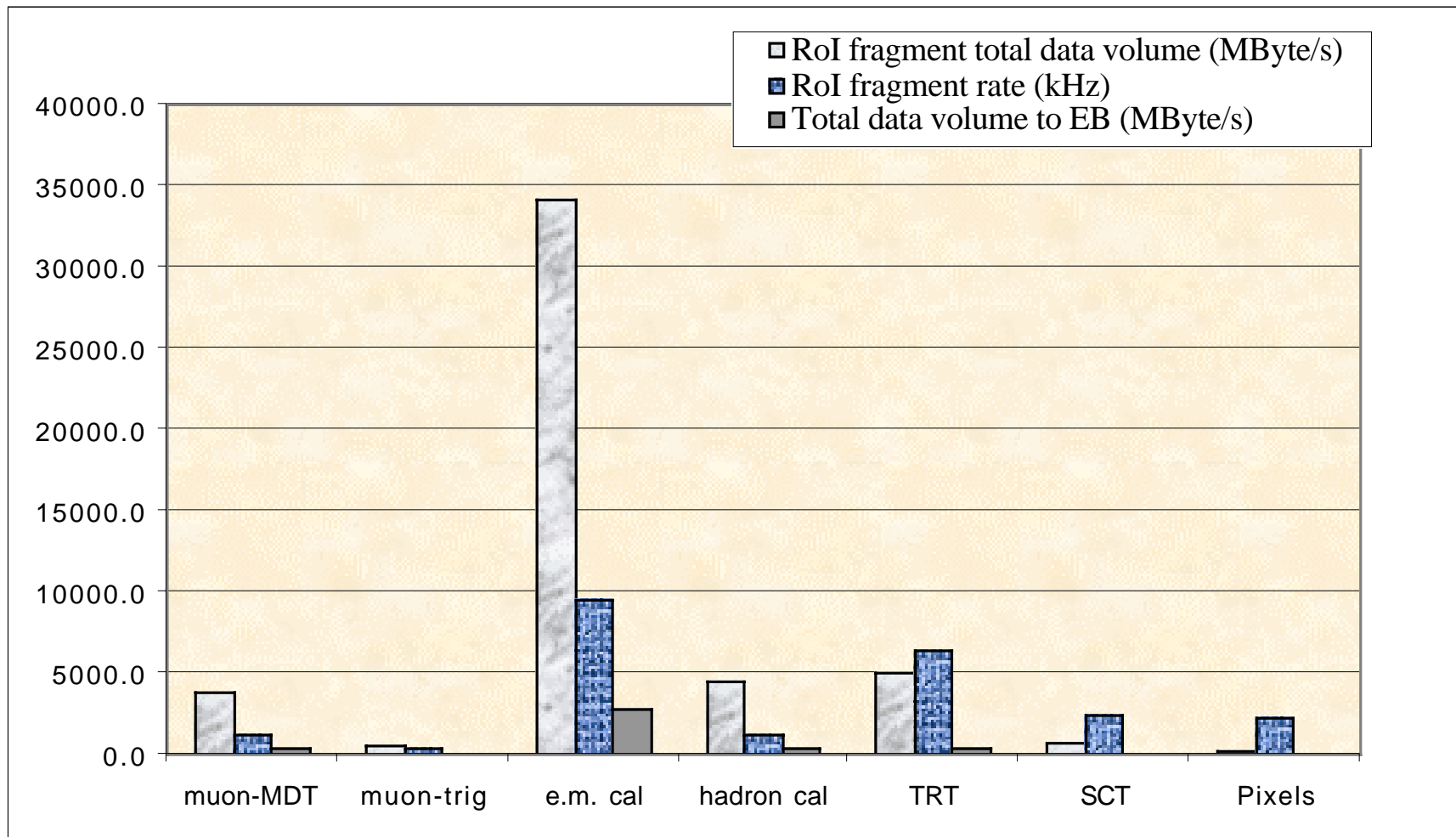
No fragmentation allowed : 4750 fragments * 1800 Bytes = 8.6 MByte

Fragmentation allowed : 463 fragments * 1800 Bytes = 840 kByte

Low luminosity, 40 kHz LVL1 rate, seq., B-physics, 2.0 RoIs from scan in calorimeter and muon detector



Low luminosity, 40 kHz LVL1 rate, **non**-seq., B-physics,
2.0 RoIs from scan in calorimeter and muon detector



Format detector description ROBsPerRoI program modified, for describing grouping of ROBINs

#Pixels grouped mapping (RKB 22/09/99)

Format EtaMinMaxPhiMinMax Detector Pixels

0	-2.6923365	-1.7005045	-0.0436335	3.0979595
-1	-2.6923365	-1.7005045	-0.0436335	1.0035645
-1	-2.6923365	-1.7005045	0.4799665	1.5271635
-1	-2.6923365	-1.7005045	1.5271635	2.5743615
-1	-2.6923365	-1.7005045	2.0507625	3.0979595
1	-2.6923365	-1.7005045	3.0979595	6.2395525
-1	-2.6923365	-1.7005045	3.0979595	4.1451575
-1	-2.6923365	-1.7005045	3.6215585	4.6687565
-1	-2.6923365	-1.7005045	4.6687565	5.7159535
-1	-2.6923365	-1.7005045	5.1923555	6.2395525