



Murrough Landon 16 December 2014

Progress (or lack of)



### •FOX PDR deadline inspired some progress

- •A few diagrams already shown at these meetings
- •Worked through high level mapping of eFEX EM inputs
- •No objections raised so far...

## • Since then: no deadlines, not much development

- •LAr have nominated George Aad to work on their mappings
  - •Met briefly at TDAQ week Calo+Trigger meeting
  - •Need to set up further detailed discussion
  - •Check that work originally done by Stefan Simion is continued
  - Produce a document
    - •All in between Run 2 commissioning
- •Vague agreement that meetings of engineers would be good
  - •But nothing happened there so far either?



## Backup: PDR Diagrams & Tables



## Fibre Counts at 6.4 Gbit/s

Calo Region vs N.Fibers	EM Barrel	EM Endcap	Spec	cial Crate	FCAL	Tile	Tile	
to FEXes at 6.4 GDIT/S			EM Fwd	HEC		(PPM) min/max	(SROD)	
N.AMC/PPM/ROD	64	32		16	4	32	32	
eFEX (direct)	25	20	6	6	0	12/0	18	
eFEX (via 1:2 f/o)	0	0	2	6	0	0/12	0	
eFEX (after f/o)	0	0	4	12	0	0/24	0	
jFEX (direct)	12	12	0	9	24	16	0	
jFEX (via 1:2 f/o)	0	0	2	11	0	4	12	
jFEX (after f/o)	0	0	4	22	0	8	24	
gFEX (direct)	1	1	2	3	3	2	2	
Direct/AMC	38	33	8	18	27	30/18	20	
To Fanout/AMC	0	0	4	17	0	4/16	12	
After Fanout/AMC	0	0	8	34	0	8/32	24	
Total direct	2434	1056		416	108	768	640	
Total fanouts	0	0		336	0	320	384	
Total from AMCs	2434	1056		752	108	1088	1024	
Total to FEXes	2434	1056		1088	108	1408	1408	

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## Fibre Counts at ~10 Gbit/s

Calo Region vs N.Fibers	EM Barrel	EM Endcap	Specia	al Crate	FCAL	Tile	Tile	
to FEXes at ~10 GDIt/s	min/max	min/max	EM Fwd	HEC		(PPM) min/max	(SROD) min/max	
N.AMC/PPM/ROD	64	32	-	16	4	32	32	
eFEX (direct)	20/30	16/24	10	9	0	6/12	6/12	
eFEX (via 1:2 f/o)	0	0	0	0	0	0	0	
eFEX (after f/o)	0	0	0	0	0	0	0	
jFEX (direct)	6	6	4	17	16	12	12	
jFEX (via 1:2 f/o)	0	0	0	0	0	0	0	
jFEX (after f/o)	0	0	0	0	0	0	0	
gFEX (direct)	1	1	2	3	3	2	2	
Direct/AMC	27/37	23/31	16	29	19	20/26	20/26	
To Fanout/AMC	0	0	0	0	0	0	0	
After Fanout/AMC	0	0	0	0	0	0	0	
Total direct	2048	864	7	20	76	736	736	
Total fanouts	0	0		0	0	0	0	
Total from AMCs	2048	864		0	76	736	736	
Total to FEXes	2048	864	7	20	76	736	736	

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## **FOX Demonstrator**

### •Lots of optical connections...



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# Diagrams: Fanout to eFEX

Corners in eFEX design require additional copies at particular eta, phi locations - these diagrams show layout for 6.4 Gbit/s
At ~10 Gbit/s the optimal pattern is shifted by 0.2 in phi
PPMs (and sRODs at 10 Gbit/s) are different at different locations





### •EM to eFEX (NB hadronic not shown)

- •LArFOX & eFOX modules each cover octant in phi \* 0.8 eta •But eFOX octants offset by 0.4 in phi compared to LArFOX
- •Regroup sets of 5 + 5 fibres into 10 fibre ribbons
  - •At ~10 Gbit/s the optimal pattern would (probably) be 7+3 fibres

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# FOX Module Examples (2)

## •EM to eFEX (~ 10 Gbit/s)

- Two LArFOX outputs regrouped into one eFOX module
- Two outputs from eFOX module to two eFEX modules
  - •One for core inputs (48 fibres), one for environment (12 fibres)



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# FOX Module Examples (3)

### •EM to eFEX full phi ring (for 0.8 in eta) •LArFOX and eFOX modules aligned with phi offset



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