Trigger Meeting
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Status of HCAL TRIDAS

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(with D. Baden, C. Tully,
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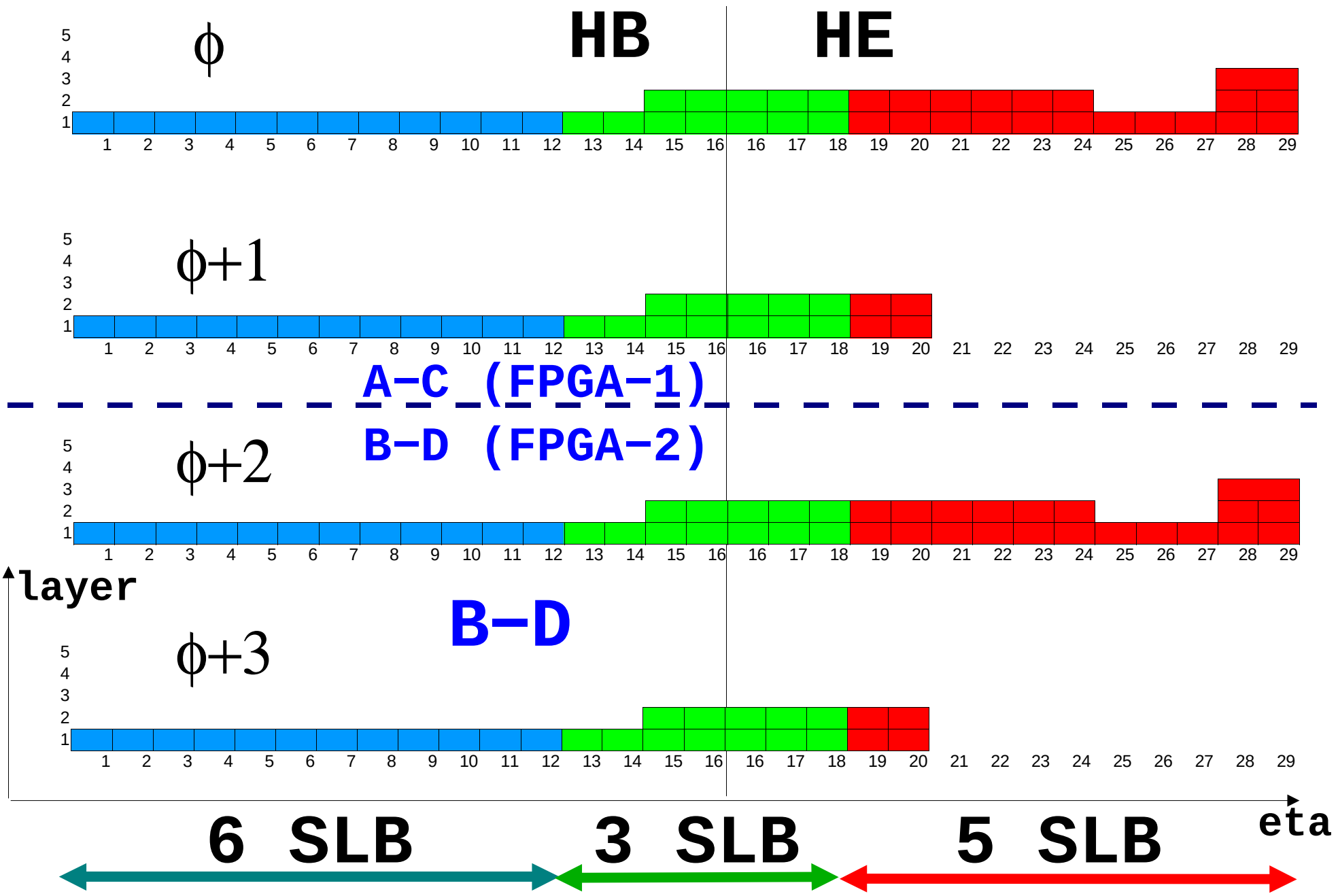
20° slice: 144 ch. (3 HTR)



HCAL Channel Count

	channels	fibers	trig towers	SLB	HTR	crates	HTR/crate
HB (pure)	1728	576	1728	216	36	3	12
HB/HE overlap	1728	576	864	108	36	3	12
HE	1728	576	1440	180	36	3	12
HO	2160	720			45	3	15
HF	1800	600	144	18	38	3	12.67
TOTAL	9144	3048	4176	522	191	15	

Notes:
No. of HF channels may increase
HF trigger must be fully understood
HO may end up in trigger
30 links at 200 kB/s average rate

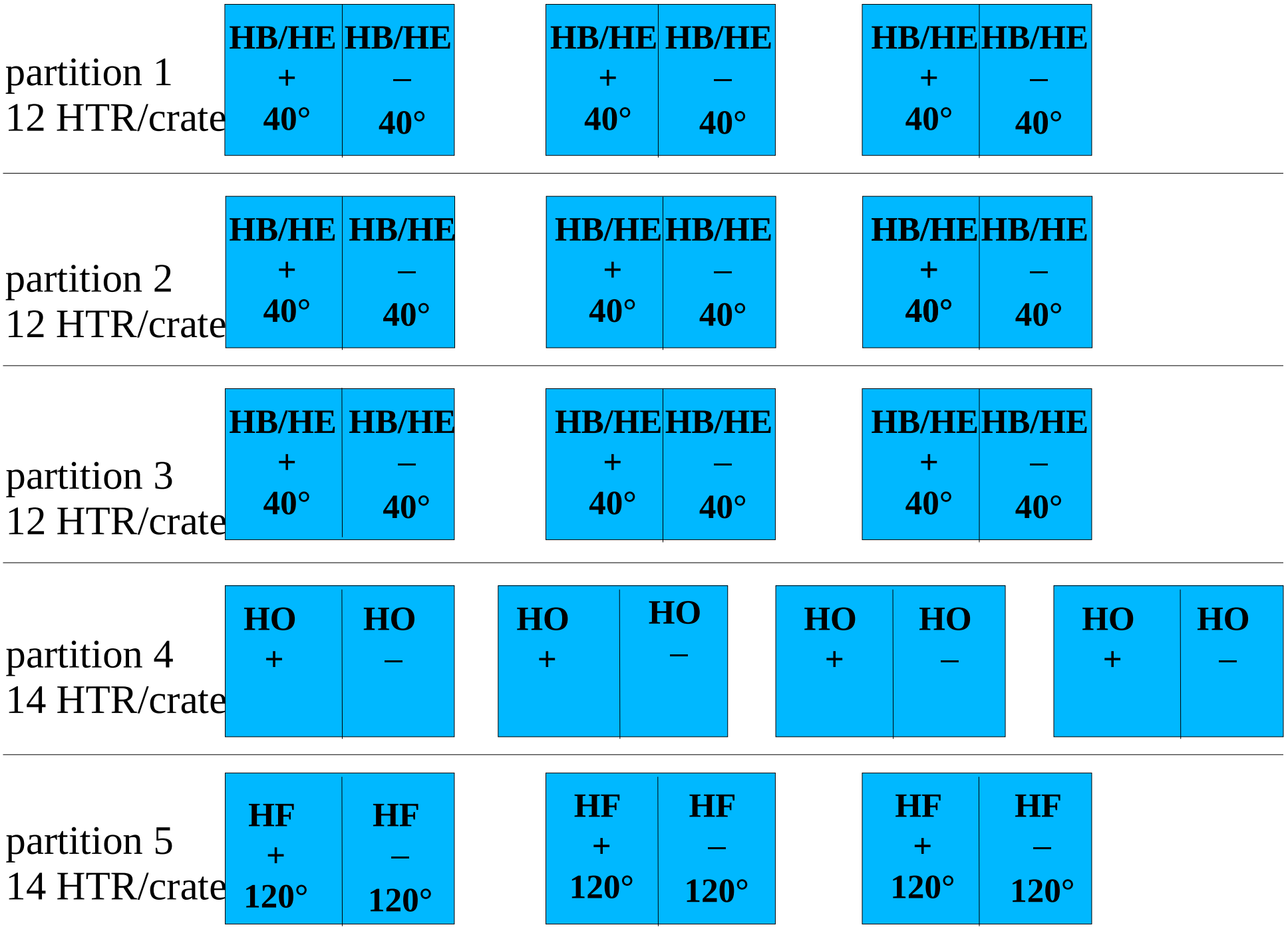
New: February 9, 2002
HCAL Channel Count

	channels	fibers	trig towers	SLB	HTR	crates	HTR/crate
HB (pure)	1728	576	1728	216	36	3	12
HB/HE overlap	1728	576	864	108	36	3	12
HE	1728	576	1440	180	36	3	12
HO	2160	720			54	4	13.5
HF	1800	600	144	18	38	3	12.67
TOTAL	9144	3048	4176	522	200	16	

Notes:
No. of HF channels may increase
HF trigger must be fully understood
HO may end up in trigger
32 links at 200 kB/s average rate

Interesting possibility:

use double width DCC
(mount 2 Slinks on logic card)
Transition card not needed (saves $)
For HB, HE
DCC = 4 slots
HTR = 12 slots
TTC fanout = 1 slot
interface = 1 slot
18 slots filled (21 available)
and for HO and HF 20 slots filled


partition 1
12 HTR/crate
HB/HE + 40°
HB/HE – 40°
HB/HE + 40°
HB/HE – 40°
HB/HE + 40°
HB/HE – 40°
partition 2
12 HTR/crate
HB/HE + 40°
HB/HE – 40°
HB/HE + 40°
HB/HE – 40°
HB/HE + 40°
HB/HE – 40°
partition 3
12 HTR/crate
HB/HE + 40°
HB/HE – 40°
HB/HE + 40°
HB/HE – 40°
HB/HE + 40°
HB/HE – 40°
partition 4
14 HTR/crate
HO +
HO –
HO +
HO –
HO +
HO –
HO +
HO –
partition 5
14 HTR/crate
HF + 120°
HF – 120°
HF + 120°
HF – 120°
HF + 120°
HF – 120°

Colleagues,
HTR cards for HO are dedicated only to HO channels which provides us the maximum flexibility for producing some sort of trigger primitive signal.
We are free to do what makes the most sense from an overall HCAL/RPC system perspective.
The two options which immediately come to mind are:
1) Make them the same as HB, HE, and HF, i.e. transmit encoded energy data over a high−speed serial Vitesse link
This is certainly not the nicest option for either end of the interconnect nor the least expensive. It is not recommend unless there is a compelling reason for the muon trigger to know the actual energy seen by each HO scintillator each crossing.

2) Simplify the trigger link to one bit per HO scintillator − a "hit" bit
One could use either a simple threshold or a window (programmable of course) to say yes or no each crossing. Hit−bit data could be sent over parallel links using the 40 MHz accelerator clock or multiple thereof.
Since the data paths are not present to bring all of these hit bits to one location on the HTR motherboard or to one Serial Link Board (SLB) connector, our challenge is to find a clever way to use the SLB connectors to accomplish this. I can think of a couple somewhat heavy−handed ways to do it, but the board designers who are responsible for making sure it meets specs get to make the call.
Note that the running histograms needed to keep an HO hit−bit system operating in a reasonable place in noise hit versus efficiency space can easily be kept by a Level 2 process.
− − John E.