A few items for the round-table

B. Jeanneret CERN/ABP WG6 at IWLC_2010

The way to produce these beams



Beam production

- Gun must produce $n = 2922 \times 24 \times 50 = 3.5 \times 10^6$ bunches/s (current I = 4A)
- Must alternate trains with odd/even bunches
- Odd/even bunch structure must be programmable inside the rise-time period (Olexsiy)
- Timing tolerance for the beam at the entrance of the DB Linac:
 - $\quad \Delta \varphi_1 = 0.1^\circ @1 GHz \Leftrightarrow 85 \ \mu m \Leftrightarrow 0.3 \ ps$
- Timing at 12 GHZ (synchonisation DB/MB & MB e⁺/e⁻) :
 - − $\Delta \varphi_2 = 0.2^{\circ}@12$ GHz \Leftrightarrow 14 μm \Leftrightarrow 0.46 fs (46 × 10⁻¹⁵ s)
- As for the DB Linac itself , in the segment before compression:
 - Gradient : $\Delta G/G < 2 \times 10^{-3}$ coherent over 100 klystrons, $< 2 \times 10^{-2}$ per klystron
 - Phase : $\Delta \phi = 0.05^{\circ}$ to avoid undue bunch lenghtening (A. Aksoy, D. Schulte)

Can a thermo-ionic gun, followed by a bunching System, do this ?

Will a reliable laser gun exist ?

CTF3 with pulse compression: $\Delta\varphi\sim 10\text{-}50^\circ$ along train What do we prove for CLIC $\Delta\varphi?$

What can CTF3 tell us about this ?

Will it give us a proof of principle ?

Options for Dipoles & Vacuum vs. SR

- Super-conducting super-ferric magnets
 - s.c coils, but classical C-yoke for field shaping
 - More expensive, but power ÷5
 - Cost savings with time
 - Cold pipe (~20-30K) \rightarrow Thermal expansion vanishes
 - Another vacuum regime to study
- Classical resistive magnets
 - Berylium pipe at SR-impact
 - Transparent to 6 KeV X-rays
 - SR absorbed in water behind
 - Be disliked for safety reasons ⇔negotiable ?

 \rightarrow Ageing solved

Operability



Future (post-CDR)

- Many oustanding issues to be worked-out
- Can CTF3 validate the requirements for the CLIC Drive Beam ?
- If not, what do we need to do so

My worries : Mismatch between work to do & manpower

• Activity scattered in too many 'sub-projects'

CTF3	CTF3+	CLIC-500GeV	KLIC	ILC
	CTF3++	CLIC-3TeV		
	CLIC0	CLIC-var-E		

Will we reduce this in 2011?