



European ILC activity update

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FALC-GDE meeting, 21/1/11



European Collaborations

- NB – Europe most complex of the three regions – very difficult to encapsulate all activities.
- Overall summary within lots of fluctuations – in both directions – is that European resources more or less constant over next 2 years.

- TTC - began as substantially European, but now world-wide



- TIARA & EUCARD – FP7 framework for accelerator R&D



- Framework 7 - HiGrade



- National programmes

- CERN – ILC/CLIC synergy



- European X-FEL

- enormous synergy between X-FEL and ILC is preparation and understanding of SCRF cavities and modules.

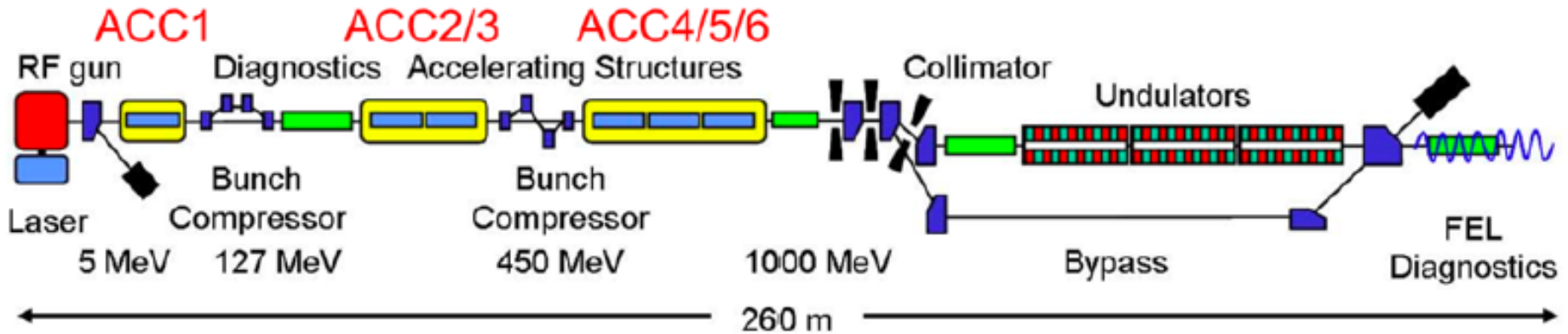




European Activities

- Diversity of national programmes -> diversity in ILC-related activities – but dominated in terms of volume by Superconducting RF because of XFEL.
- R&D aimed at greater average acceleration voltage (though e.g. ILC-HiGrade); operation of unique facilities – FLASH @ DESY.
- Individual countries specialise in certain areas – e.g. France in RF couplers & Superconducting RF engineering; Germany in Superconducting RF developments, test facilities; Italy in Superconducting RF tuner, damping rings; Spain in specialised SC magnets, beam instrumentation; UK in beam instrumentation.
- All countries contribute to detector development for experiments

Full beam-loading long pulse operation → “S2”



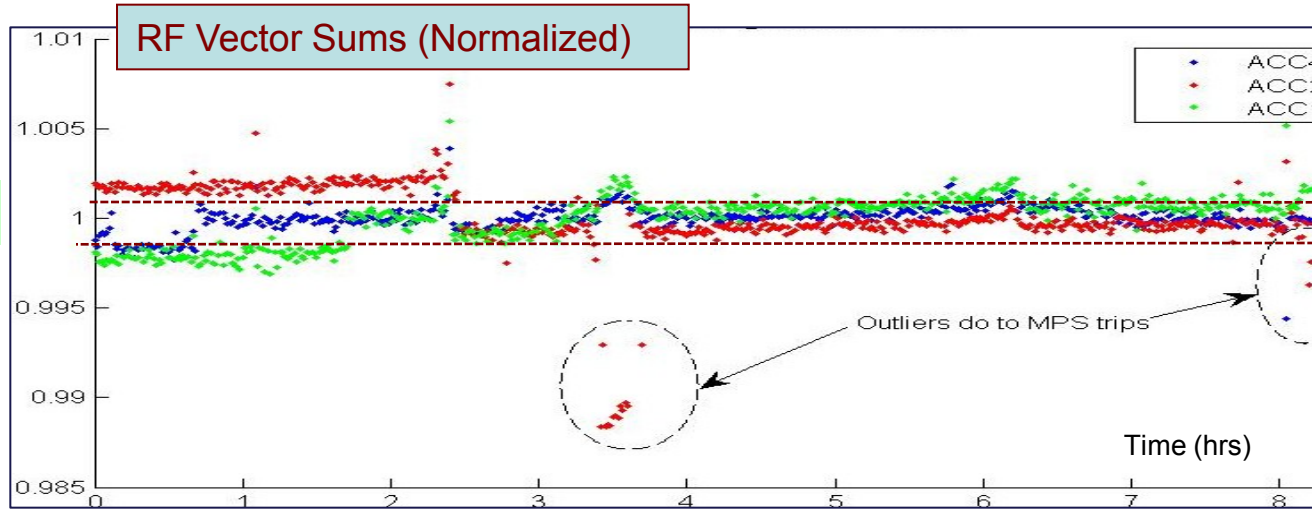
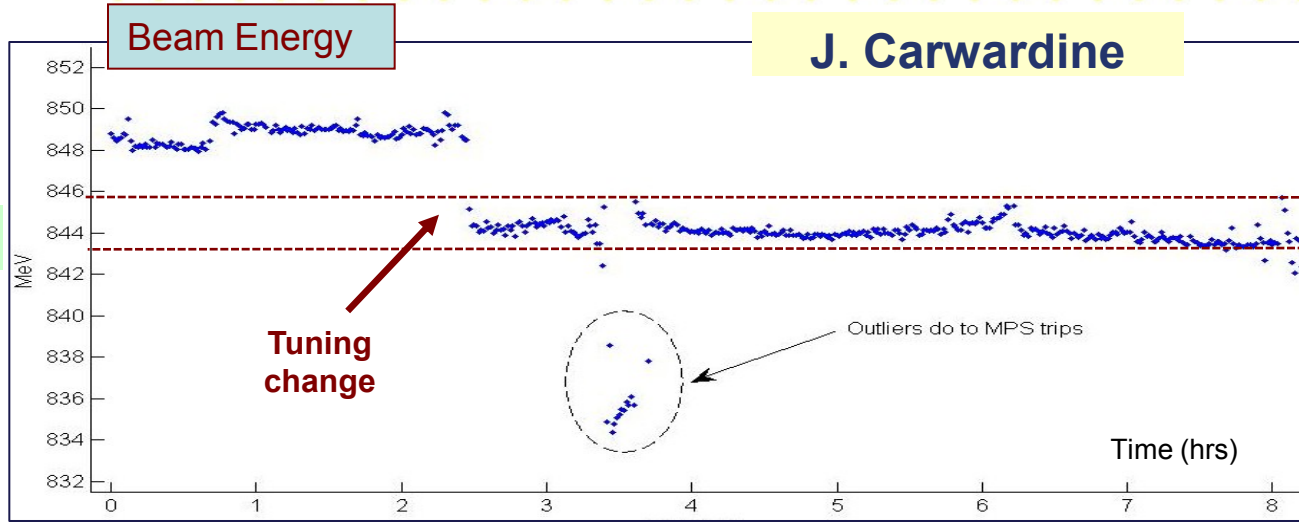
		XFEL	ILC	FLASH design	9mA studies
Bunch charge	nC	1	3.2	1	3
# bunches		3250	2625	7200*	2400
Pulse length	μ s	650	970	800	800
Current	mA	5	9	9	9

- Stable 800 bunches, 3 nC at 1MHz (800 μ s pulse) for over 15 hours (uninterrupted)
- Several hours ~1600 bunches, ~2.5 nC at 3MHz (530 μ s pulse)
- >2200 bunches @ 3nC (3MHz) for short periods



Results from Flash on stability

J. Carwardine



8 hrs



Overview of European situation

- GDE has been successful in driving up industrial interest and capability in SCRF in other regions – European lead probably still there but narrowing rapidly.
- Number of FTEs working explicitly on ILC – as opposed to implicitly by contributing to other programmes which are synergetic – e.g. XFEL – is small and decreasing. E.g. UK – where only 1 person explicitly funded to work on ILC – although, thanks to CERN, a good core programme of LC research is preserved under the CLIC programme – but all is relevant to ILC.

- At least in Germany there is an upward fluctuation coming. New programme inside Helmholtz Association – Accelerator R&D – will lead to new activities in areas relevant to ILC and specifically to Superconducting RF. Humboldt Foundation Professorship to BF founds new programme at 1MEuro/year for 5 years from summer 2011, some explicitly ILC and much of which relevant. On other hand, HiGrade ends at end of 2011 – but FP8 will offer new opportunities.

- Generally, positive view of ILC funding in Brussels; ILC is organisational test case for many European multi-national projects. ILC governance activity trail blazer for other projects.
- SuperB approval in Italy will surely affect European accelerator landscape – sign wrt ILC unclear – FTEs required which may take ILC people away, but SuperB uses a lot of ILC technology.



ILC/CLIC and CERN

- One of most important developments in last year has been increasing coherence between ILC and CLIC with aim of promoting a united LC community. J-P Delahaye/S. Stapnes is a member of GDE EC, BF a member of CLIC SC. S. Stapnes now appointed as LC studies leader and taking over from J-P Delahaye. BF and S. Stapnes will work closely together to ensure maximal collaboration between ILC and CLIC. Very strong help from ILC -> CLIC on experiments; many common people working on common accelerator design issues. Discussions to involve more CERN technical experts – particularly cryogenics experts – in ILC.



ILC/CLIC and CERN

	CLIC	ILC
Physics & Detectors	L.Linssen, D.Schlatter	F.Richard, S.Yamada
Beam Delivery System (BDS) & Machine Detector Interface (MDI)	L.Gatignon D.Schulte, R.Tomas Garcia	B.Parker, A.Seriy
Civil Engineering & Conventional Facilities	C.Hauviller, J.Osborne.	J.Osborne, V.Kuchler
Positron Generation	L.Rinolfi	J.Clarke
Damping Rings	Y.Papaphilipou	M.Palmer
Beam Dynamics	D.Schulte	A.Latina, K.Kubo, N.Walker
Cost & Schedule	P.Lebrun, K.Foraz, G.Riddone	J.Carwardine, P.Garbincius, T.Shidara

- + General issues group – chairs M. Harrison (ILC)/P. LeBrun (CLIC).



Summary and Outlook

- ILC Europe complex & diverse situation – lots of expertise across Europe and large number of independent funding authorities leads to some protection against large fluctuations, but causes difficulty in producing an optimally coherent programme and in ability to react to changing priorities.
- Increasing coherence and co-operation between ILC and CLIC important development. CERN is THE engine inside Europe and ILC needs the cooperation and input from CERN experts.
- European pp Strategy review in 2012 a vital piece in strategy for ILC and future of pp. Not quite in phase with ILC timetable for TDR but we will ensure a strong input into this review from ILC.
- Europe continues to play a vital role in ILC developments.