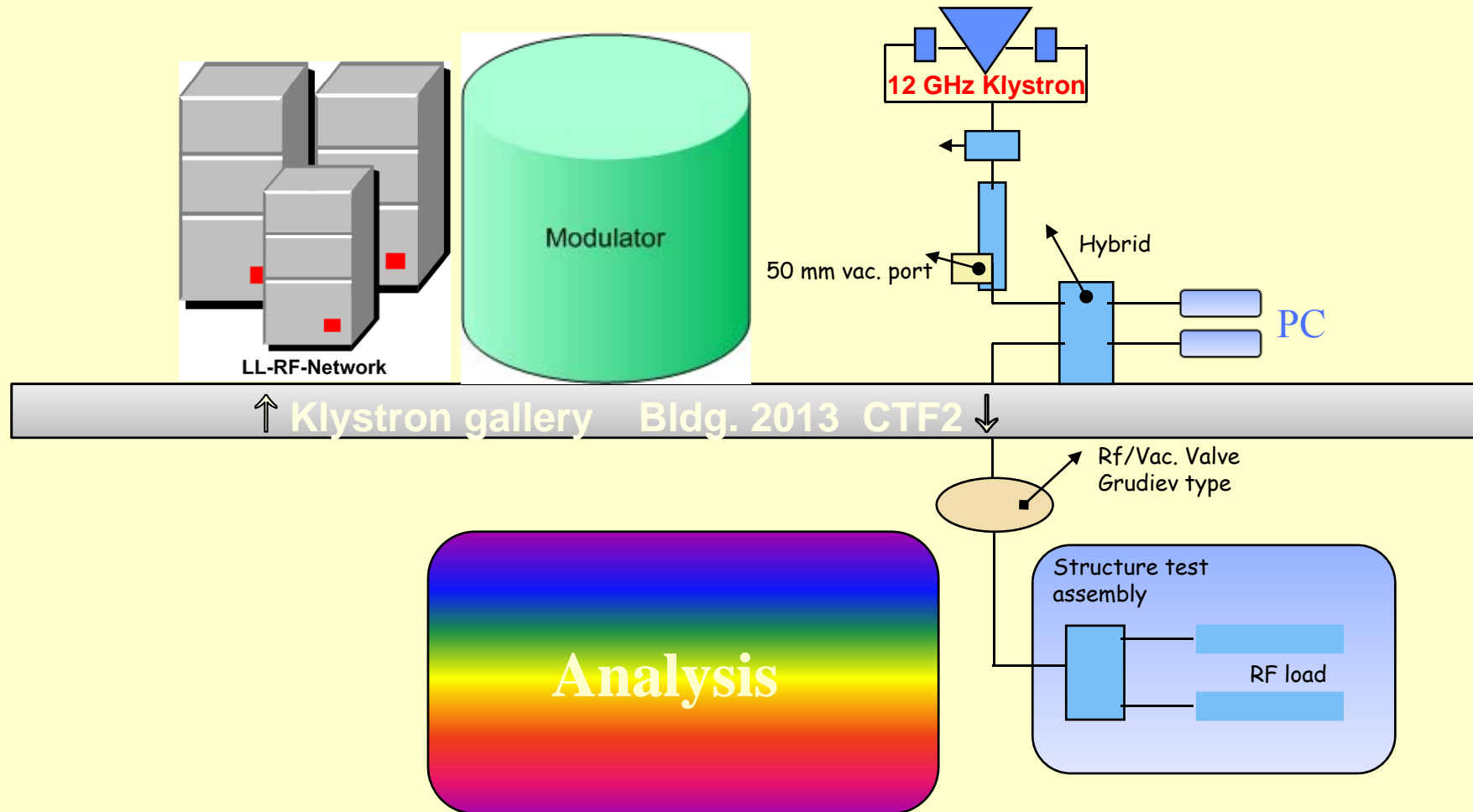
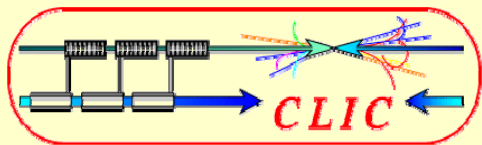
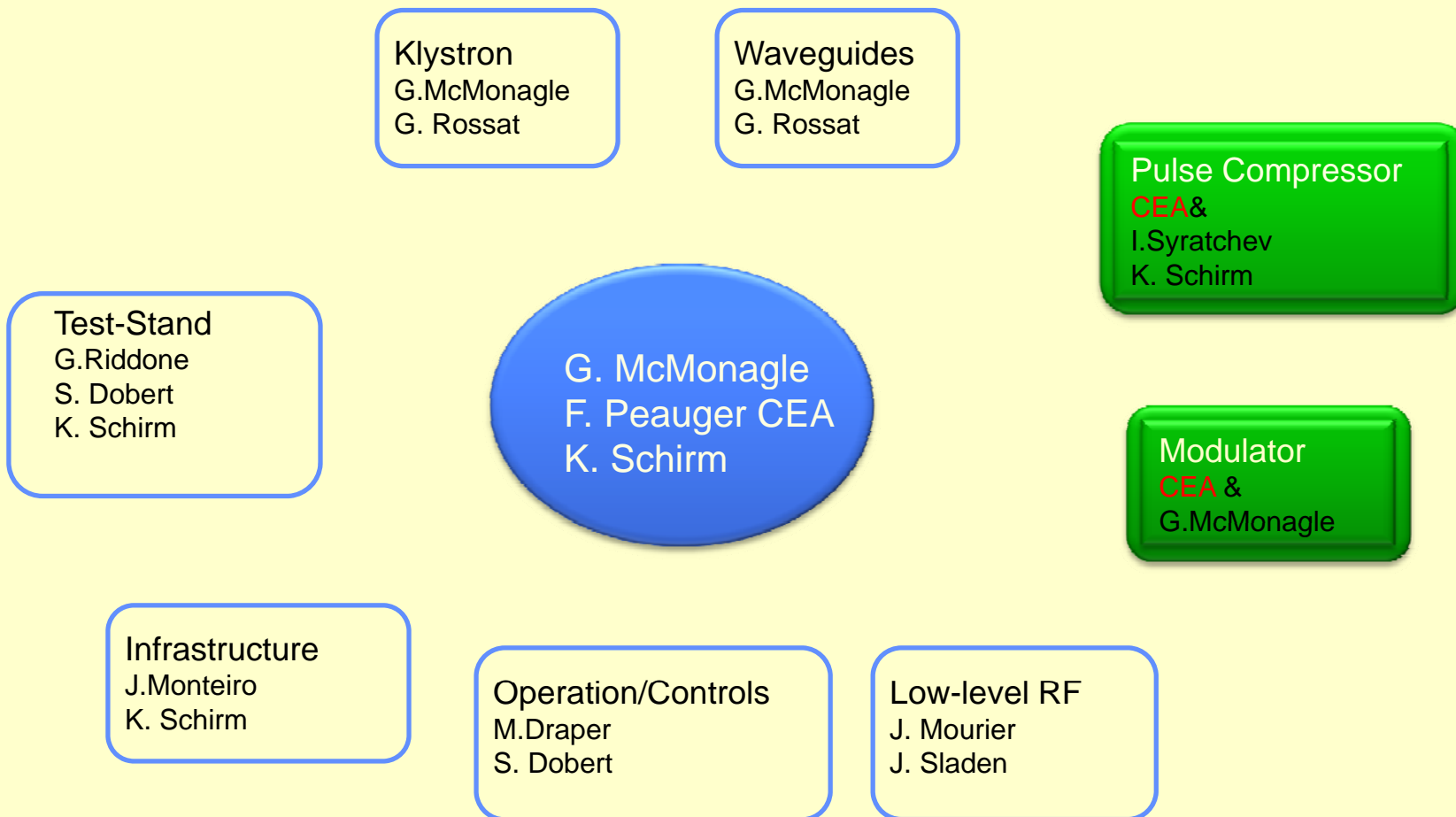


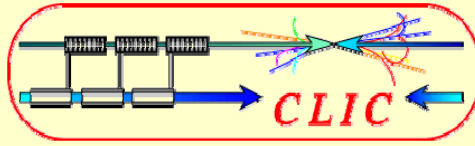
12 GHz Test- Stand at CERN





Organization - update





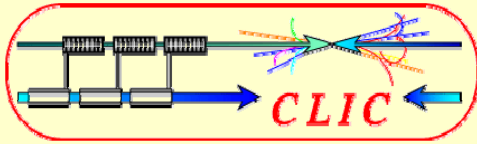
Klystron - Status at SLAC



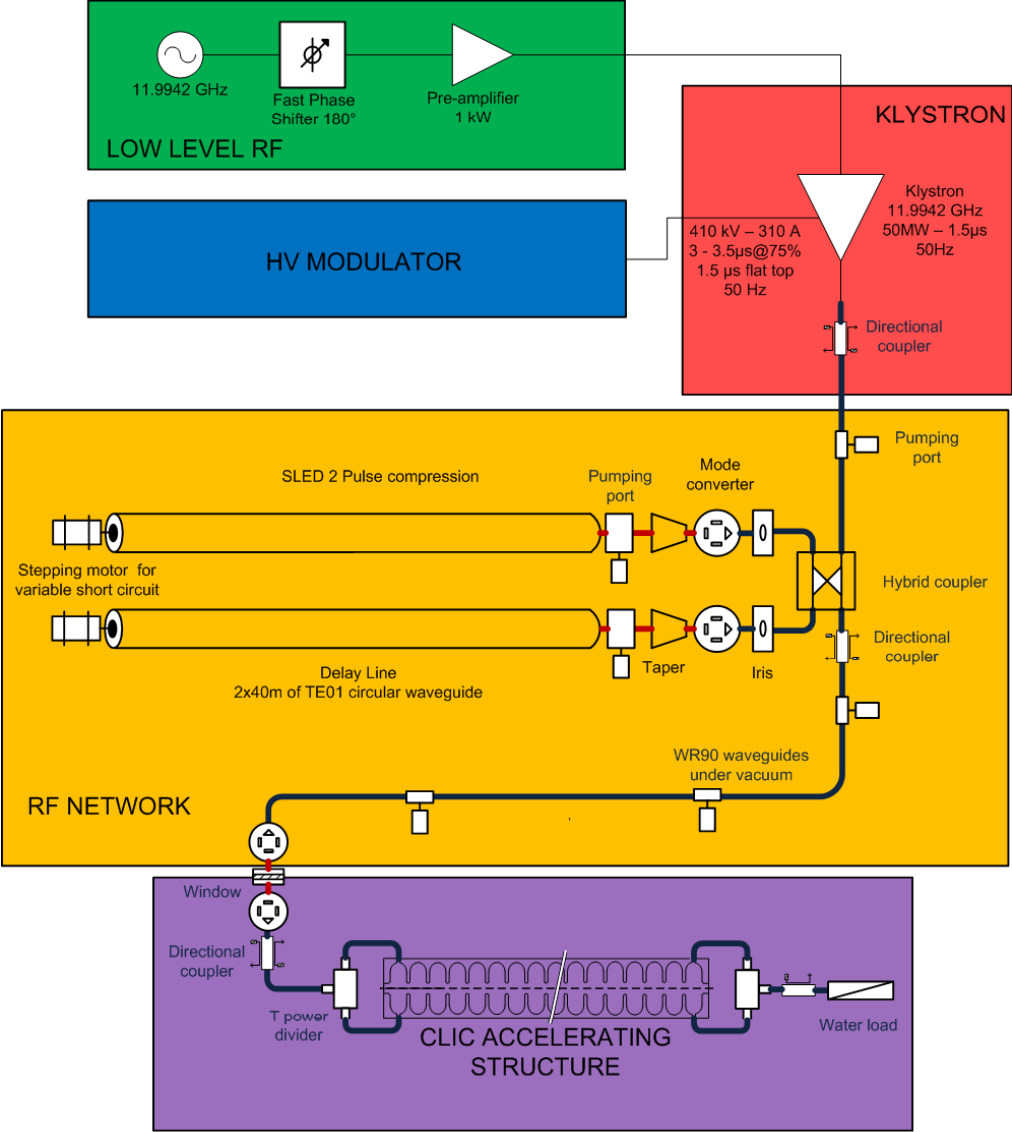
CERN 12 GHz Klystron Status

- First round of funding is in place and a charge number has been established. We are awaiting DOE approval to spend (should occur next week).
- RF design (Task 1a) is progressing well.
 - We have verified no change is required for the gun, magnet, and cavity positions.
 - The required retuning of the cavities will impact a minimum number of parts.
 - We may be able to optimize at a slightly lower voltage than the XL-4.
- Remaining RF design tasks:
 - Particle-in-cell simulations to check mode separations and optimize output cavity.
 - Output waveguide hardware scaling/redesign (window, mode converter, etc.).
 - Input waveguide hardware scaling/redesign.
- Mechanical design to begin once cavity dimensions are finalized.
- The delay in getting funding in place slips the ordering of common parts (shown as cross-hatched areas in the attached schedule). Despite this we are confident we can still achieve the February 2010 ship date.

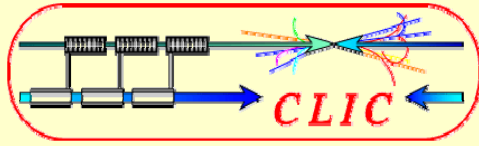
We propose an RF design review in November 2008, a mechanical design review in February 2009, and a Final design review in May 2009 subject to the availability of the interested parties.



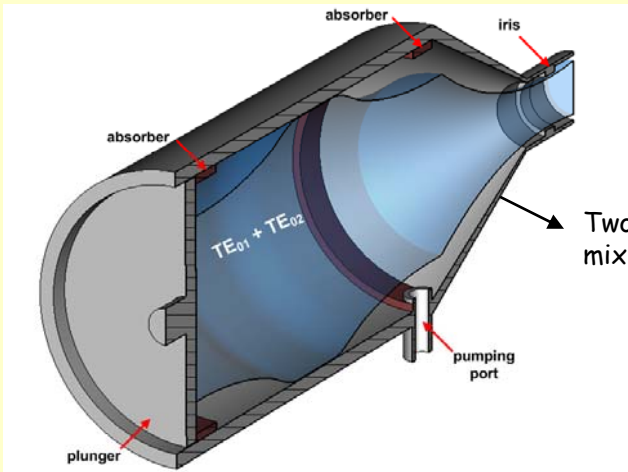
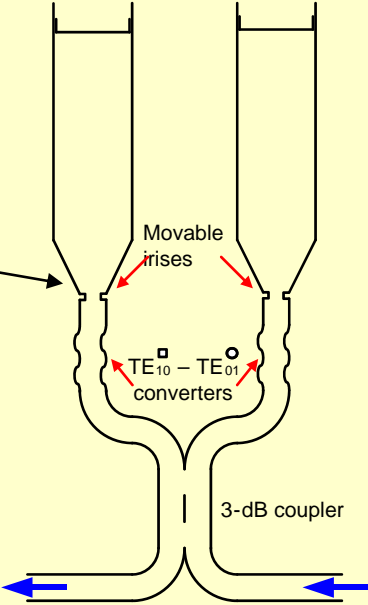
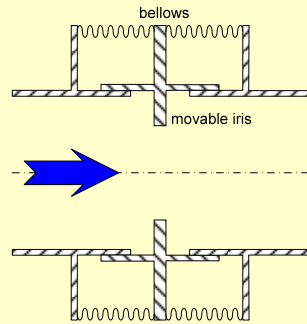
Test Stand Layout



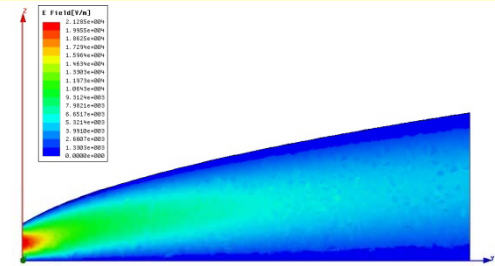
Courtesy: F. Peauger



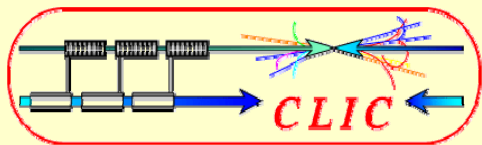
PC: Alternatives



Two modes (H01+H02) mode mixing taper



Courtesy: I. Syratchev

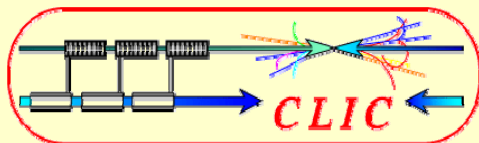


Discussion at WS



Coordination between Institutes for 12 GHz Klystron activities :

- **Technical reviews and production follow-up**
- **RF components: collaboration or individual approach?**
- **Klystron spare parts: common approach?**
- **Commissioning of test stand: participation of other institutes?**



1. Nominal Values

A summary of the nominal specified parameters is given below in Table 1.



PARAMETER	VALUE	UNITS
RF Frequency	11994.2	MHz
Bandwidth at -3dB	≥ 50	MHz
RF Power:		
Peak Power	≥ 50	MW
Average Power	≤ 3.75	kW
RF Pulse (at -3dB)	1.5	μs
HV pulse (at full width half height)	2.3	μs
Repetition Rate	50	Hz
High Voltage applied to the cathode	410-450	kV
Tolerable peak reverse voltage	≤ 100	kV
Efficiency at peak power	≥ 40	%
RF gain at peak power	≥ 50	dB
Perveance	1.15-1.3 t.b.c	$\mu\text{A}/\text{V}^{1.5}$
Klystron cathode heater power	t.b.c.	kW
Variation of cathode current with cathode heater power		
With 5% more heater power	+2.0	%
With 5% less heater power	-3.0	%
Stability of RF output signal, over the range of 0.5-1.0 of max. power and 0.75 -1.0 of max. cathode HV to be:		
RF input vs output phase jitter [*]	± 0.5 max	RF deg
RF amplitude jitter	± 0.25 max	%
Pulse failures (arcs etc.) during 14 hour continuous test period	≤ 1	
Fraction of RF power in 2 nd harmonic (calculated only)	-30 max	dB
Matching load, fundamental and 2 nd harmonic	≤ 1.15	vswr