Some documents relevant to this discussion

CLIC note 333, 1997 and NIM A, Volume 421
Scaling laws for e+/e- linear colliders, J . P. Delahaye, G. Guignard*, T. Raubenheimer and I. Wilson

CLIC note 551 and Nanobeam 2002
CLIC Beam Delivery System, M. Aleksa, R. Assmann, G.A. Blair, H. Burkhardt, A. Faus-Golfe, J.-B. Jeanneret, S. Redaelli, T. Risselada, S. Russenschuck, D. Schulte, F. Zimmermann,

CLIC note 576 2003 and Phys. Rev. Lett. 90, 224801 (2003)
Frequency and Temperature Dependence of Electrical Breakdown at 21, 30, and 39 GHz
H. H. Braun, S. Döbert, I. Wilson, and W. Wuensch, Phys. Rev. Lett. 90, 224801 (2003)

CLIC note 564 and PAC2003
Nonlinear Optimization of a Low Emittance CLIC Damping Ring Lattice, M. Korostelev and F. Zimmermann,

CLIC note 527 and EPAC 2002
Luminosity Limitations at the Multi-TeV Linear Collider Energy Frontier, D. Schulte

CLIC note 569 and PAC 2003
A Demonstration of High-Gradient Acceleration, C. Achard, H. Braun, S. Döbert, I. Syratchev, M. Taborelli, I. Wilson, W. Wuensch

CLIC note 563 and PAC 2003
Optimum Choice of RF Frequency for Two Beam Linear Colliders, H.H. Braun, D. Schulte

CLIC meeting 26-Jun-2003
Estimate the best accelerating gradient that we can expect, based on the knowledge that we have today
Walter Wuensch, Alexej Grudiev, Samuli Heikkinen

CLIC meeting 03-Oct-2003
Recent results on the design and optimization of CLIC main linac accelerating structure, Alexej Grudiev

CLIC meeting 28-Nov-2003
Drive Beam Generation and Main Beam RF Pulse-length, Possibilities and Limitation, Roberto Corsini

Why parameter discussion ?

The present nominal CLIC parameters set is no longer compatible with our present knowledge of limitations

Fortunately it seems that solutions can be found which are compatible with these limitations and do not compromise the performance

Trends:

Shorter RF pulse

Reduced bunch spacing

Lower RF frequency ?

Higher repetition rate ?

One or two drive beams ?

One or two drive beam generation complexes ?

Lower accelerating field ?

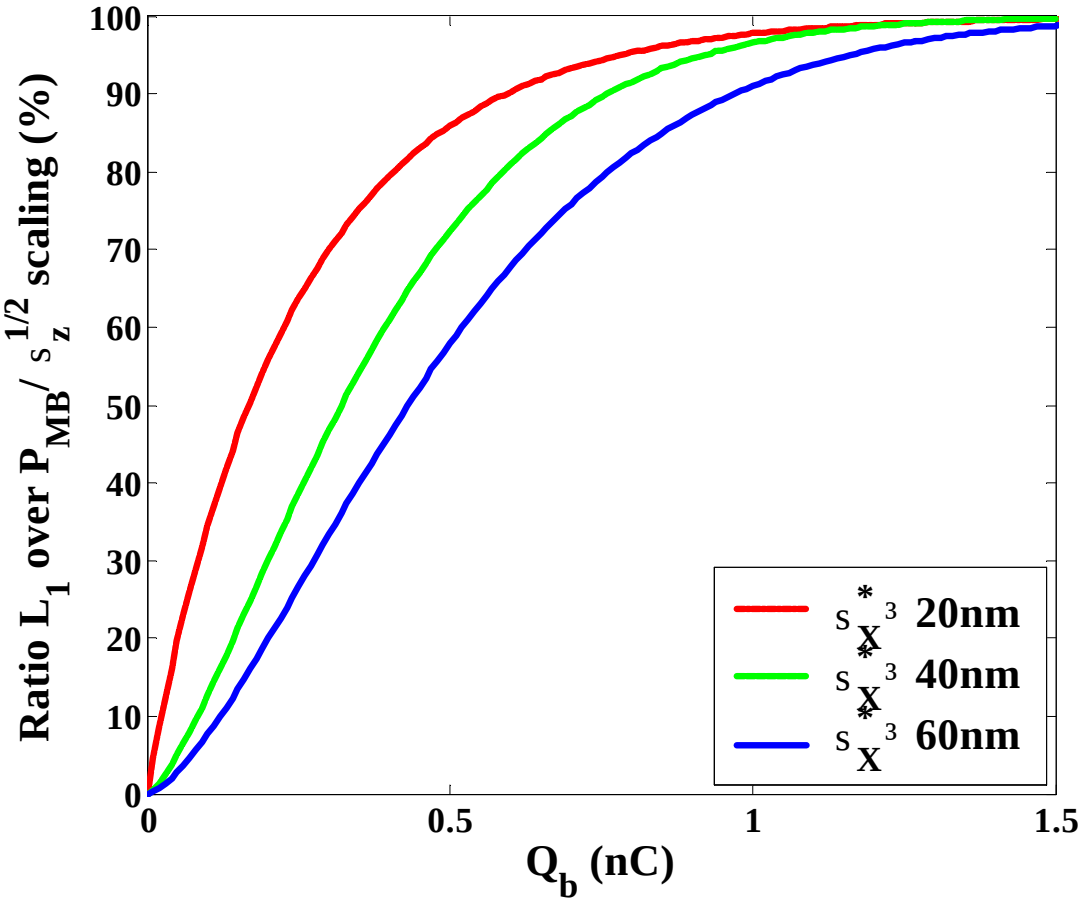
Other constraints:

Parameters need to be compatible with CTF3!
Don’t repeat CTF II dilemma, when parameters were boosted out of range the same year CTF II started.

Flexibility to accommodate new results from CTF3
(limits on power flow, surface field, temperature rise ...)

Cost estimate have to enter in the optimisation !

From Daniels optimisation of σ_X^*



$\Rightarrow$ If DR &FF limit $\sigma_X^* \geqslant 60$ nm Q_b>1 nC desirable

To get this from Alexej's HDS design frequency has to be lowered to $\lesssim$23 GHz

If HDS allows reduced bunch spacing
injector and DR frequencies need to be changed

A reduced number of RF frequencies in the CLIC complex would be desirable

Many combinations possible, what's best ?

Main beam				Drive beam			N_ν	N_ν COMMON	Comment
Injectors	Pre-acceleration (10 GeV ?)	Damping ring	Main Linacs	SHB and DL	Accelerator and 1st CR	2nd CR			
1.5	3.0	1.5	30	0.46875	0.9375	3.75	6	1-2	Present CLIC, 2x4 combination
3.0	3.0	3.0	30	0.46875	0.9375	3.75	5	1	2x4 combination, N_λ=10
3.0	3.0	3.0	30	0.625	1.25	3.75	5	2	1st CR x3, 2nd CR x4, N_λ=10
2.4	2.4	2.4	24	0.375	0.75	3.0	5	2-3	2x4 combination
2.4	2.4	2.4	24	0.75	1.5	3.0	4	1-2	1st CR x2, 2nd CR x4
2.2848	4.5696	2.2848	22.848	0.635	1.269	3.808	5	2	2x3 combination ν_{DB} similar TESLA, ν_{MB} =2x NLC

Proposed approach.

- Establish two draft parameterlists.
  One for a 30 GHz, one for a lower frequency.
- Check all subsystems for compatibility and
  re-iterate parameters accordingly
- Compare results and establish the one with better
  performance as official parameter set