What is the highest gradient that we believe, today, can be used to build CLIC?

Base discussion on:

- HDS concept - which is near ideal
- 'Classical' fatigue analysis and existing 10^8 cycle data
- CTFII high-gradient test results
- Include all quantities that we will eventually have to face

$H_{surface}$, $E_{surface}$, a/λ

$H_{surface}$

Nominal	150 MV/m
CuZr $\sigma_{150}/\sigma_{fatigue}$	$1.09^{-½}$
Engineering margin	$0.8^{½}$
	128 MV/m

$E_{surface}$

CTFII molybdenum	420 MV/m
Avoid melting	0.95
Conditioning overhead	0.95
Pulse length $t^{0.1}$	0.8
HDS E_{surf}/E_{acc}	1/2.73
	111 MV/m

a/λ

a is currently too low: estimate 1.5 to 1.75

$H_{surface}$	$E_{surface}$
128 MV/m	111 MV/m
$.95^2$	0.9
116 MV/m	100 MV/m

To go higher in gradient,

- Smaller a/λ
- Shorter pulse