

# *CLIC'08 BDS & MDI WG summary*

*only 1/3 of the speakers from CERN*

*Andrei Seryi & Rogelio Tomas*

---

---



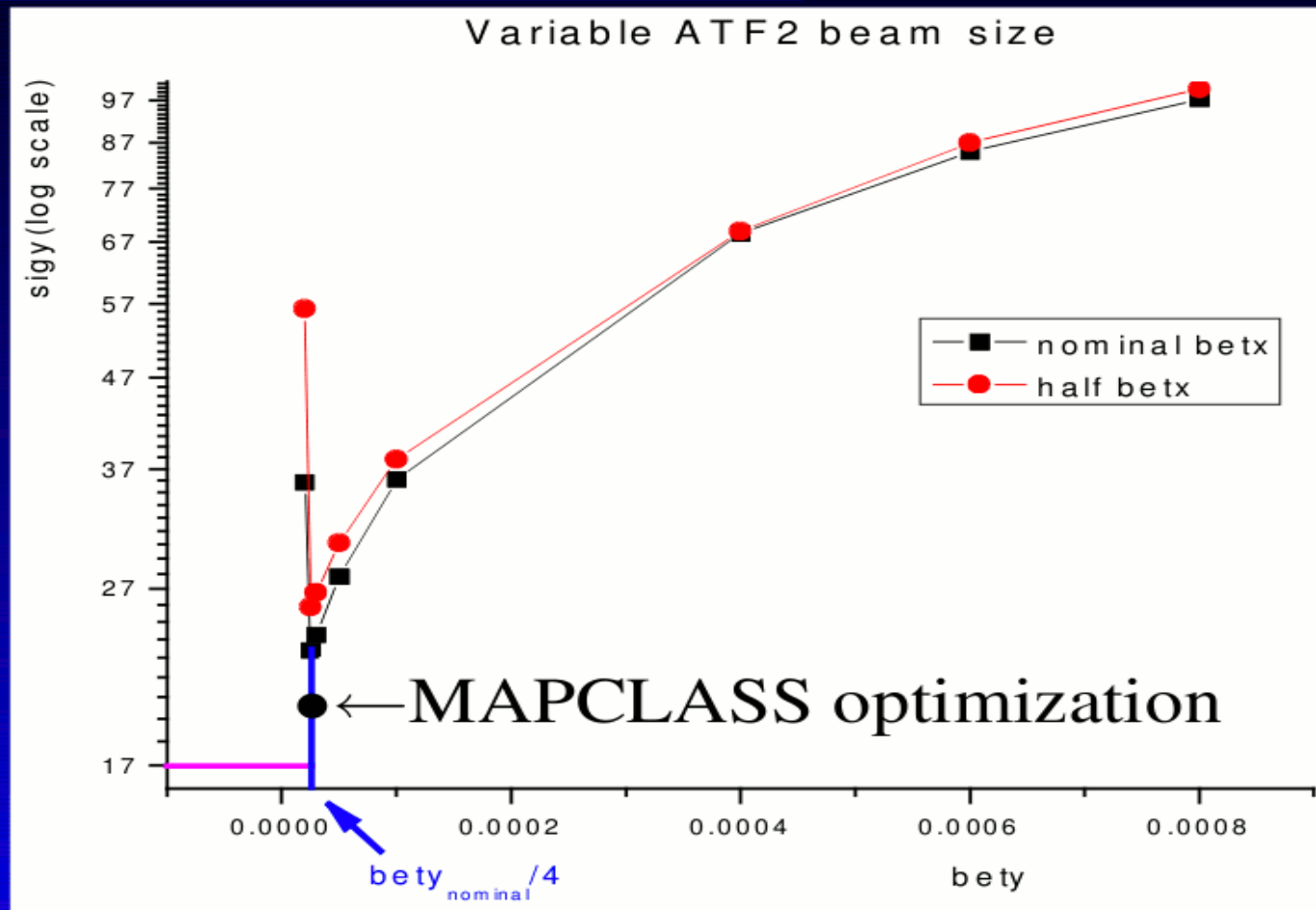
A STRETCHED WIRE AS AN ALIGNMENT REFERENCE FOR THE LHC



***Prealignment 10 $\mu$  over 400m, OK***

# ATF2 Ultra-low Betas

F. Zimmermann



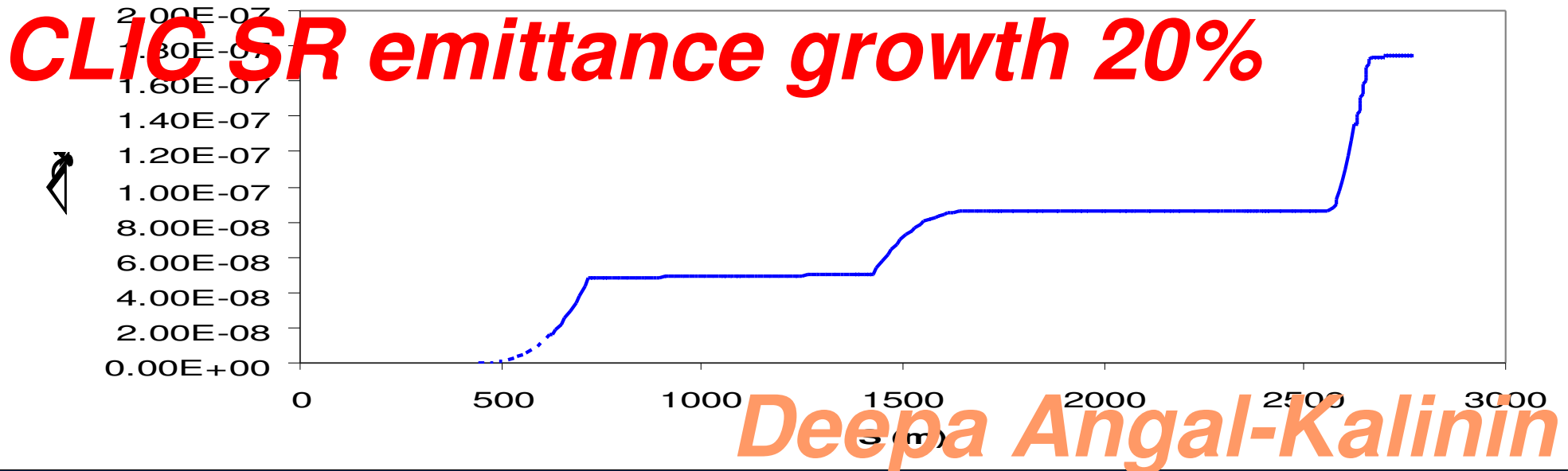
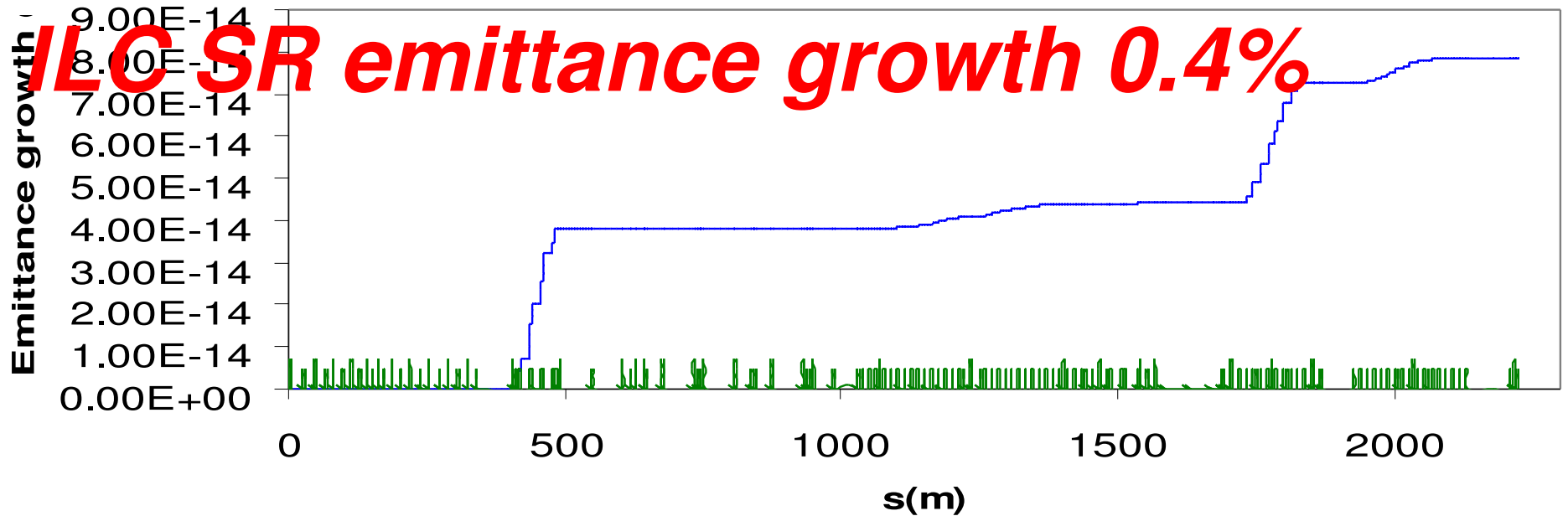
Sha is still looking into further improvements...

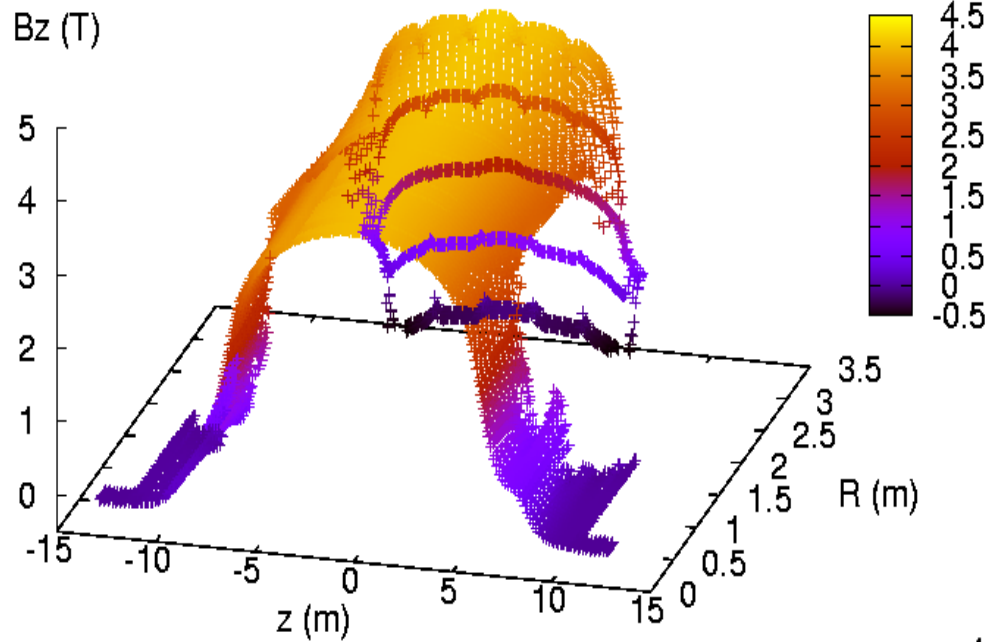
Rogelio Tomás García and Frank Zimmermann

Exploring ultra-low  $\beta^*$  values in ATF2 – p.6/18

## Excellent for CLIC & ILC !

# SR induced emittance growth - ILC - 250GeV

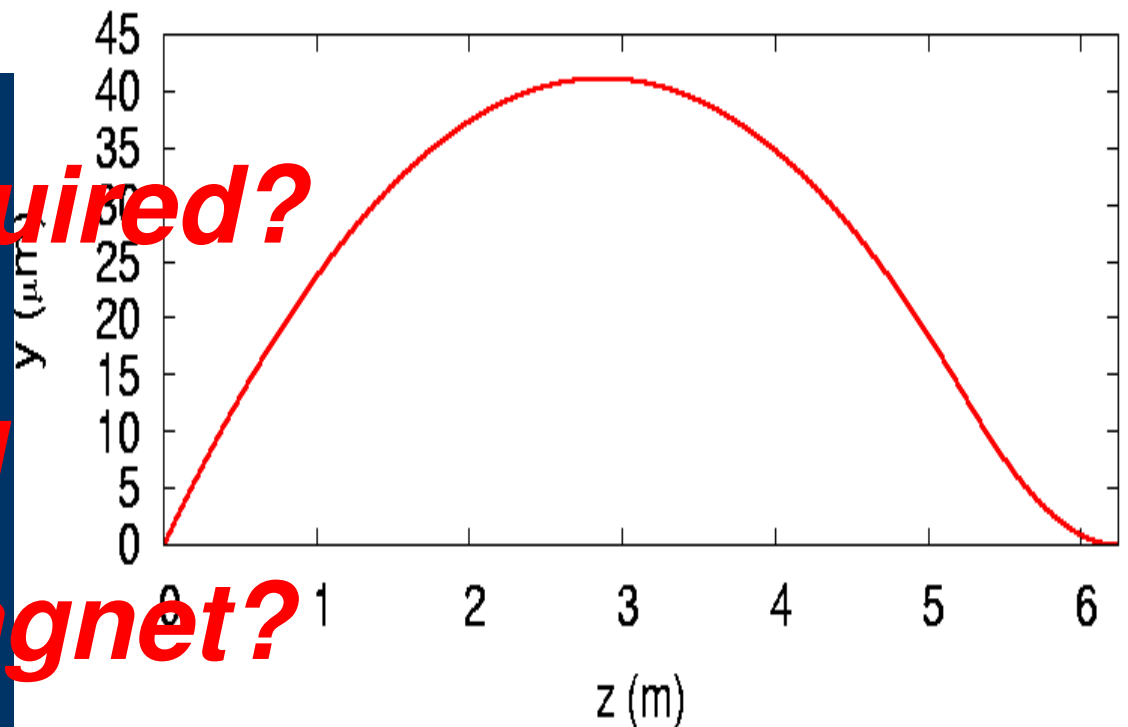




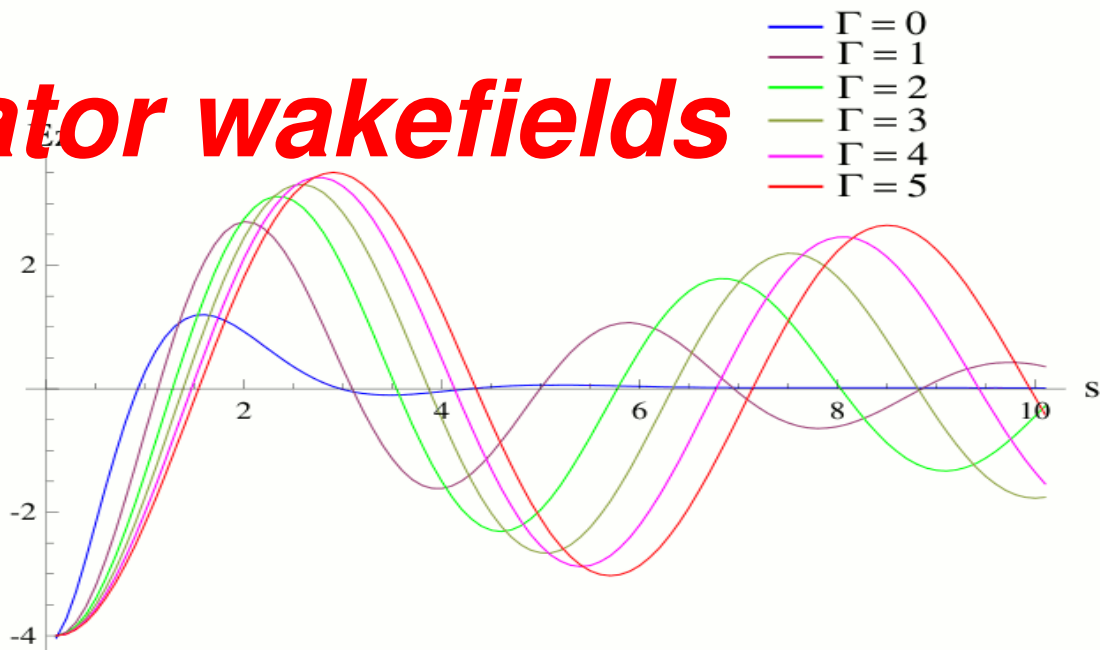
*Barbara Dalena*  
***CMS solenoid for example, too long***

***Anti-solenoid required?***

***Anti-solenoid and permanent FD magnet?***



# Collimator wakefields



The  $m = 0$  wake for various  $\Gamma$

*Roger Barlow*

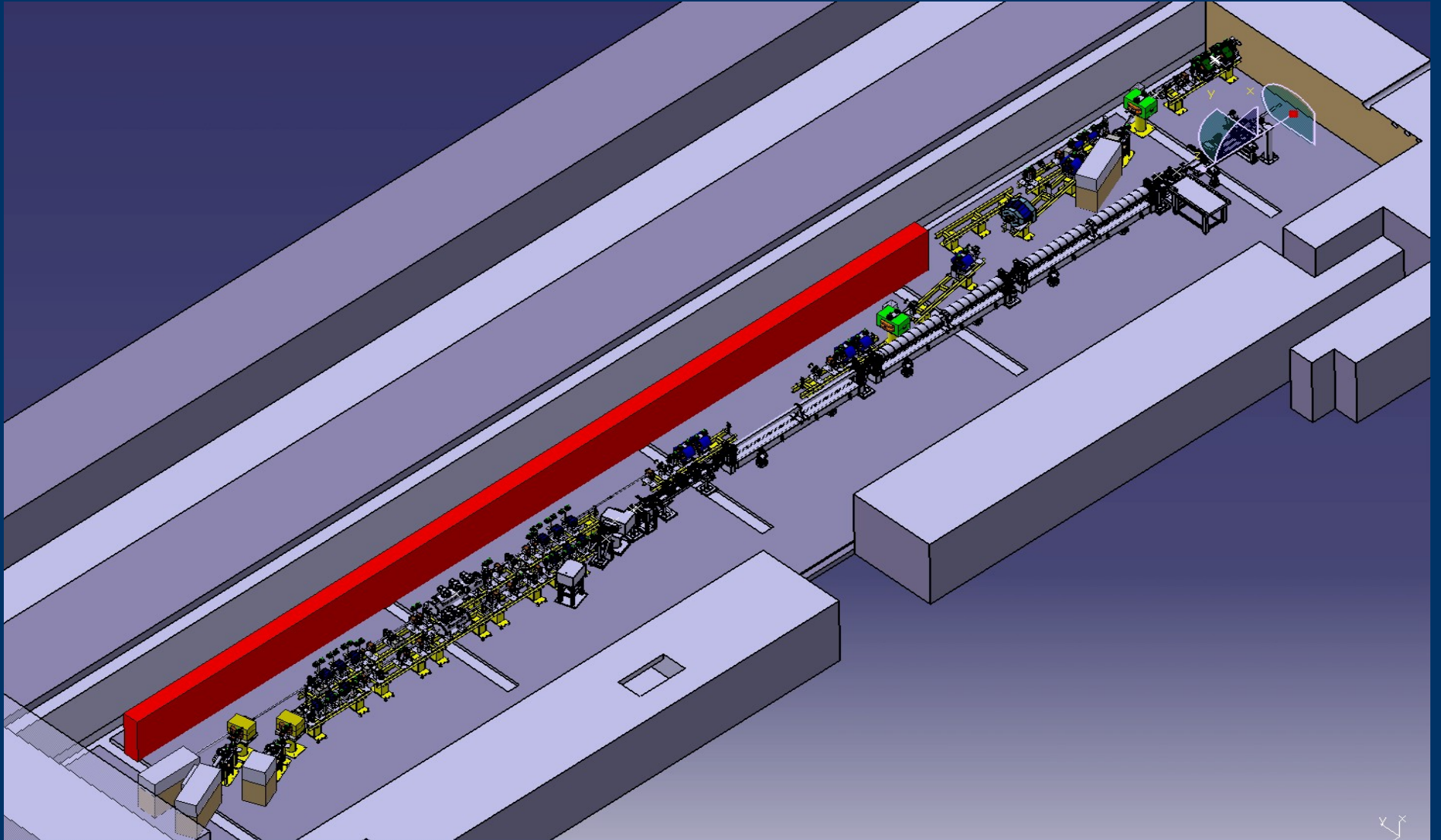
Page 22

*Does CLIC need higher order modes?*

*Tests required: CTF3 (califes), FACET, etc*

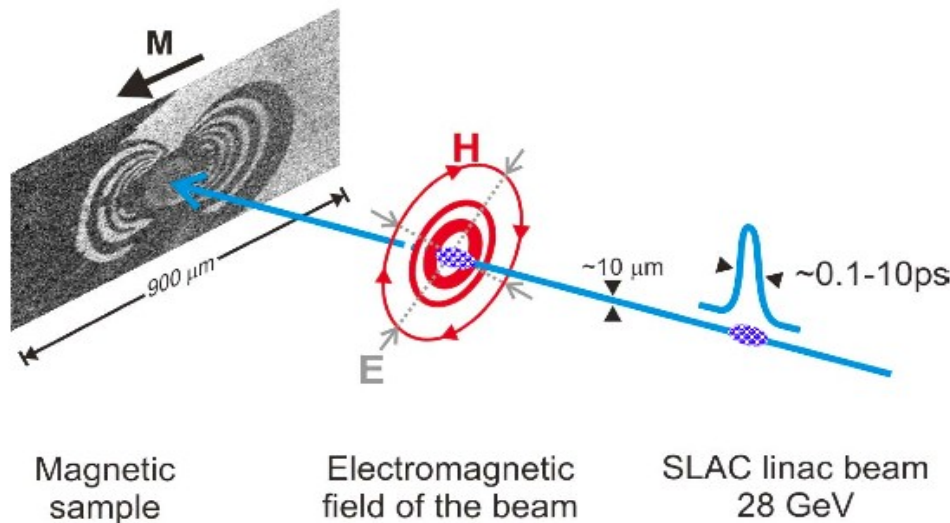
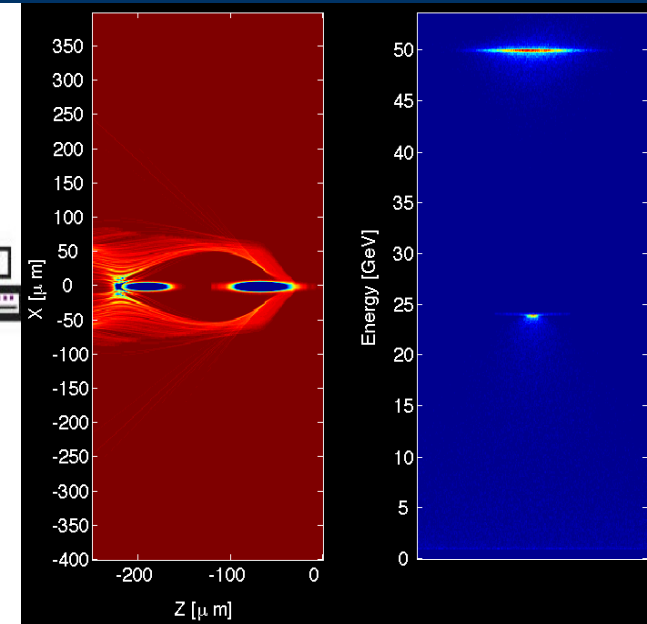
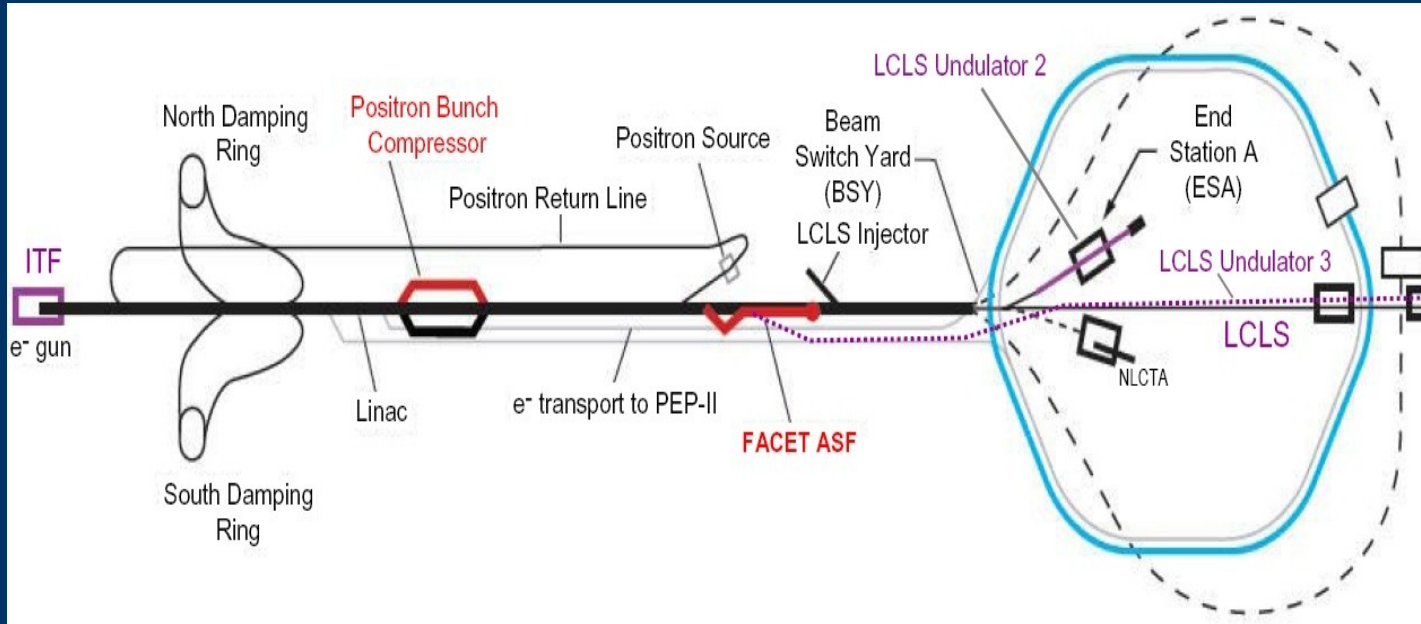


# *CTF3 CALIFES probe Beam*



# FACET

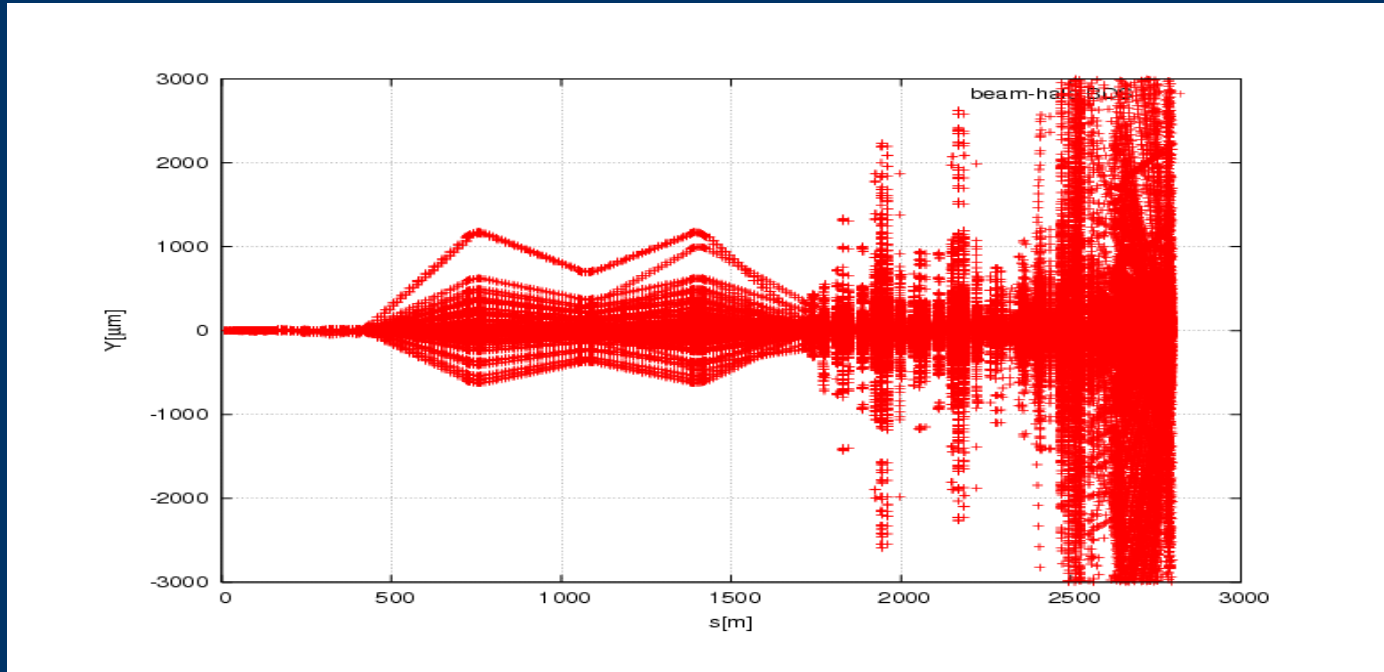
## Facility for Advanced Accelerator Experimental Tests



**FACET seems to be conceived to test CLIC concepts**



# *Halo and Tail Generation (HTGEN)*



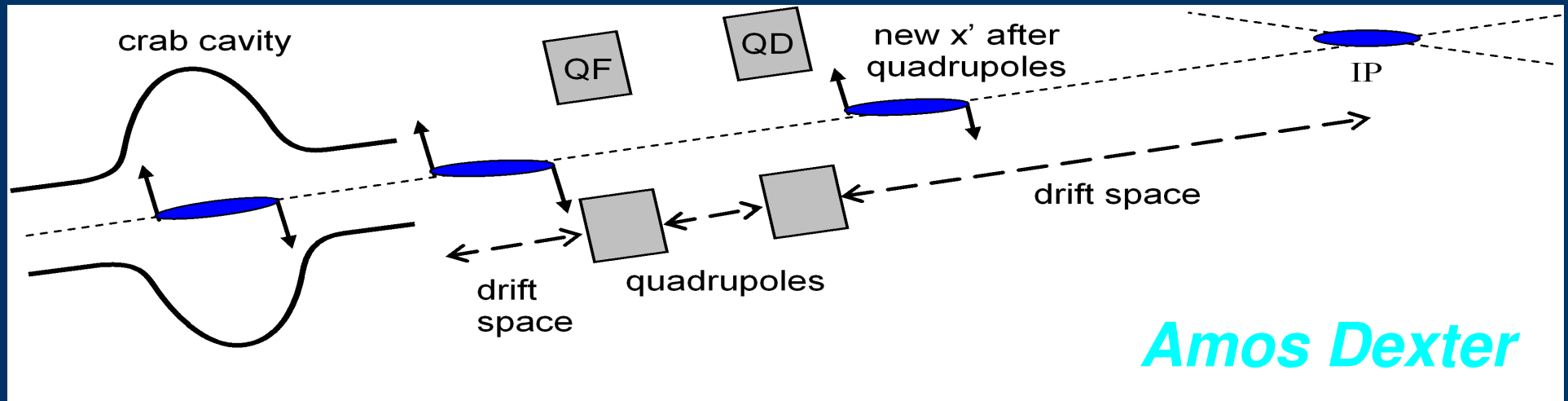
*Ijaz Ahmed & Helmut Burkhardt*

*Sophisticated tools are ready!*

---

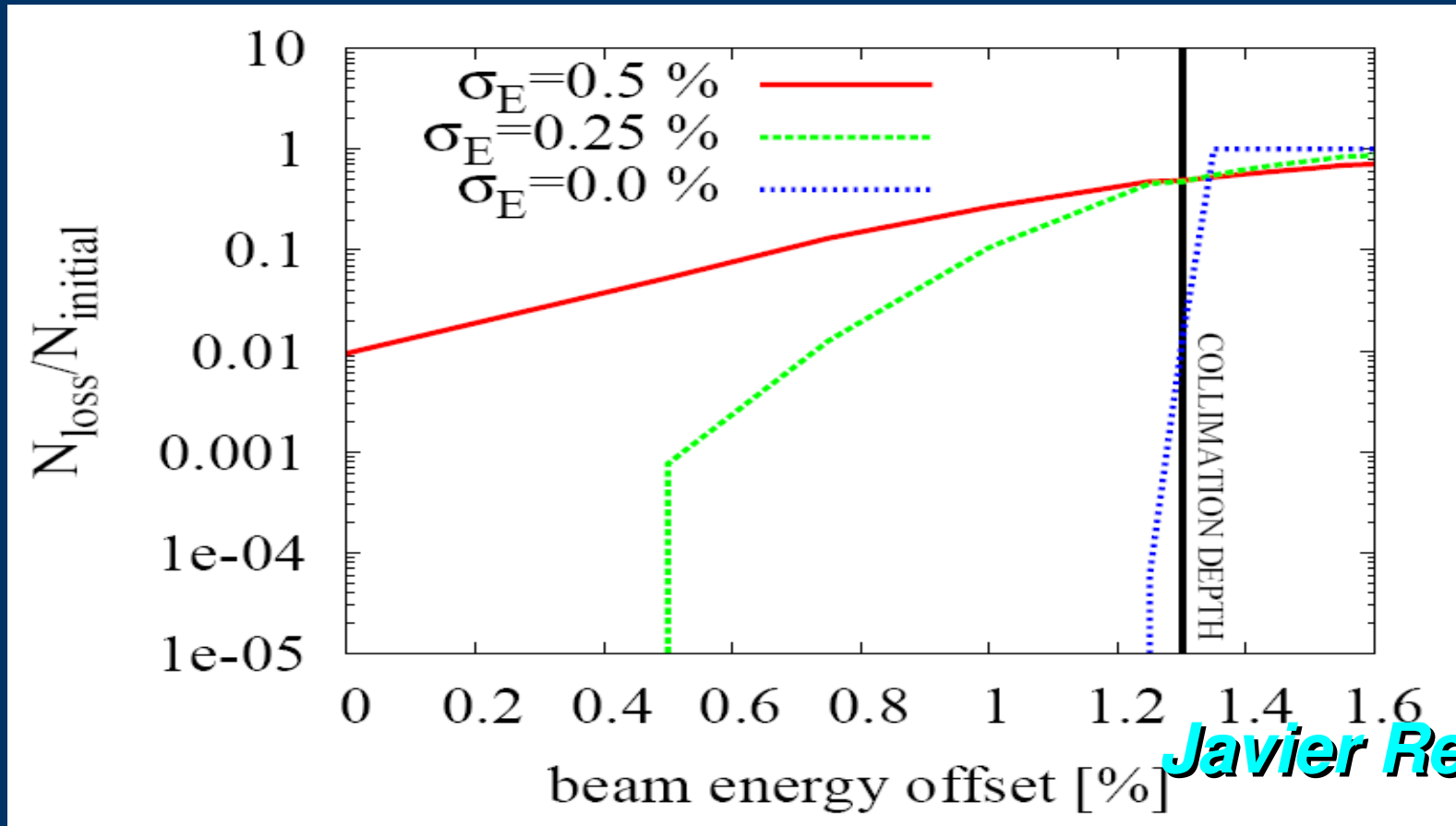
---

# CLIC Crab Cavity



**Phase jitter 15 times tighter than ILC!**  
**Need RF experts to find solutions:**  
**SC CC, PETS, High frequency over-**  
**moded cavities, ?**

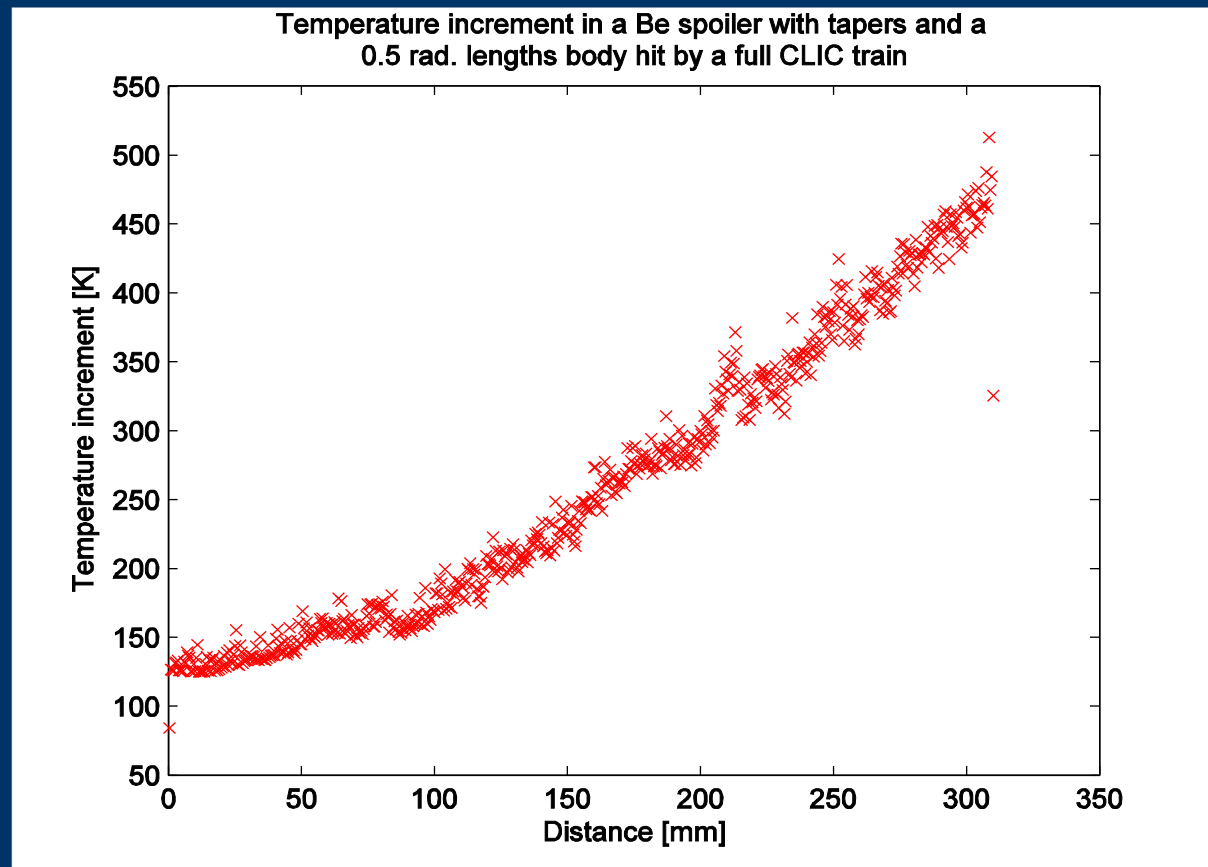
# Collimation efficiency



Javier Resta

**Collimation system remains effective  
for new parameters**

# *Collimator survival*



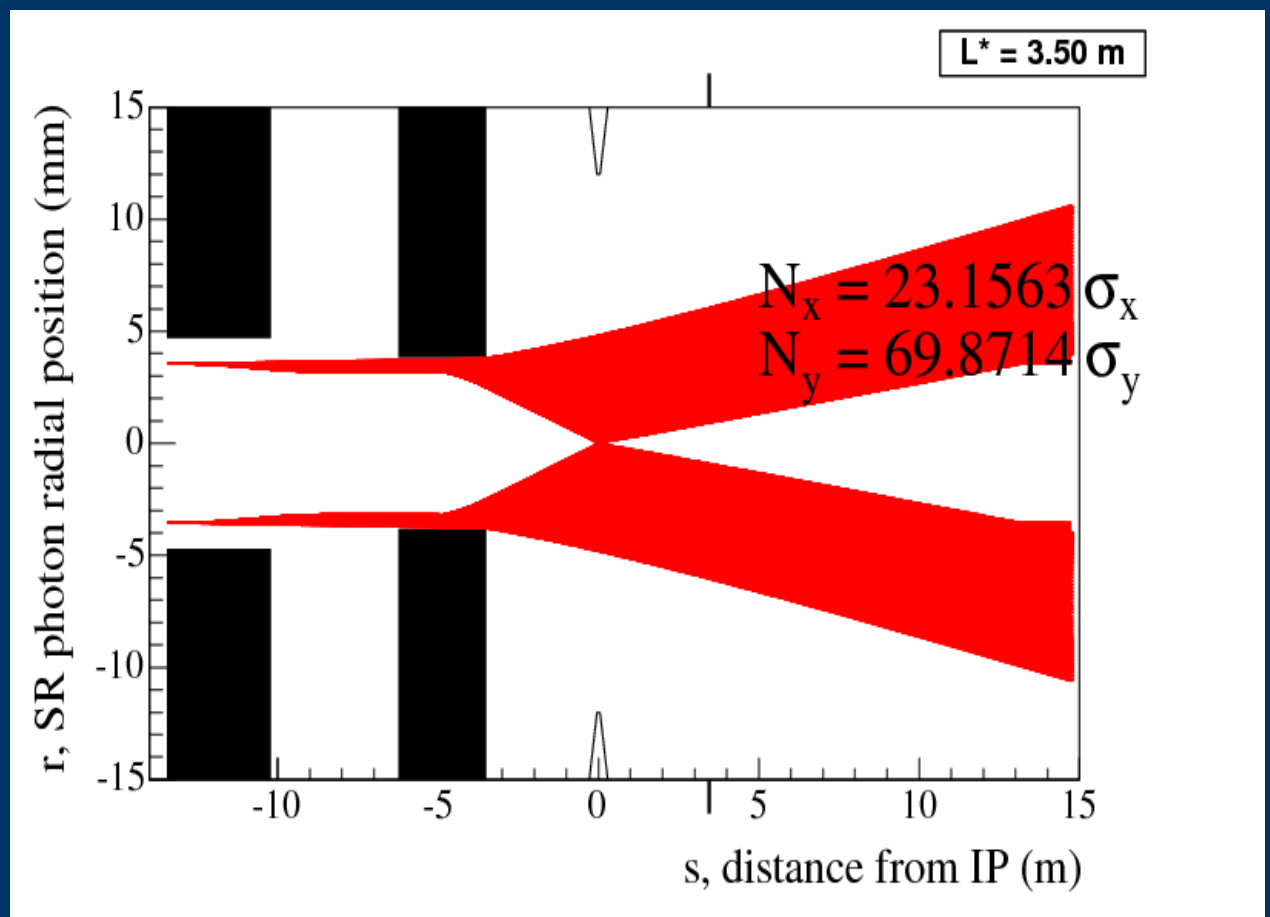
*Juan Luis Fernandez Hernando*

*Be collimator does not melt but reaches fracture T. What are the fracture tolerances?*

---

---

# Collimation depth



**Frank Jackson**

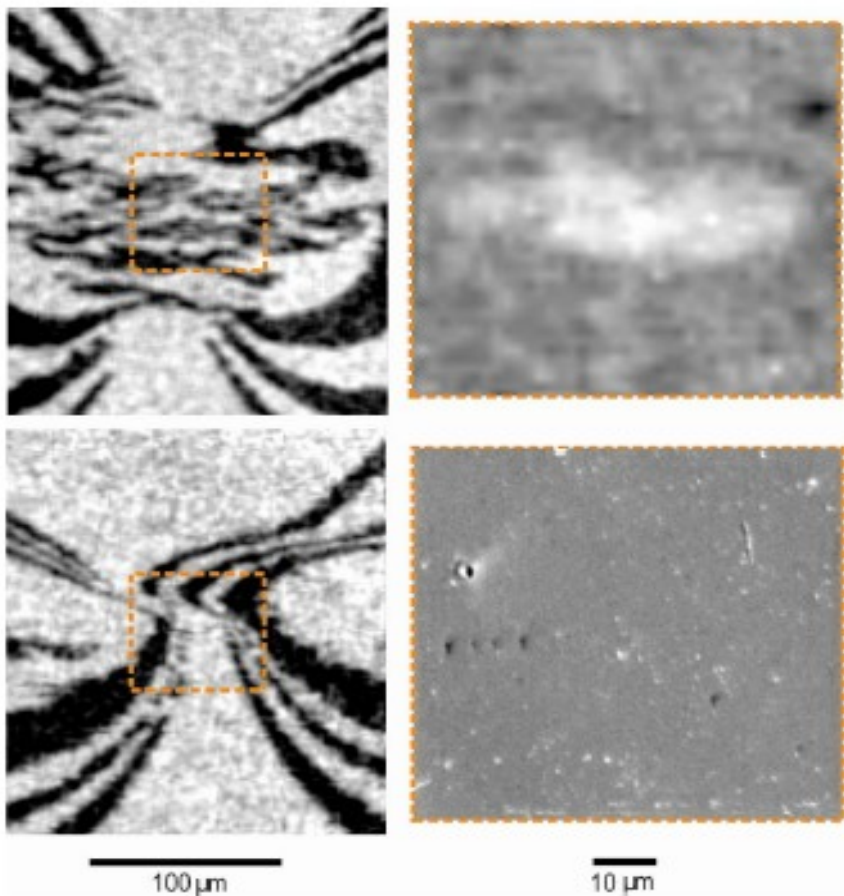
**Radiation fan OK from linear optics.**

**What about non-linearities?**



# Possibility of a shorter collimation

Ultra-short, ultra-strong field pulse shows no heating and damage



Pulse length: 4 ps

**Further tests  
required: FACET**

Pulse length: 140 fs

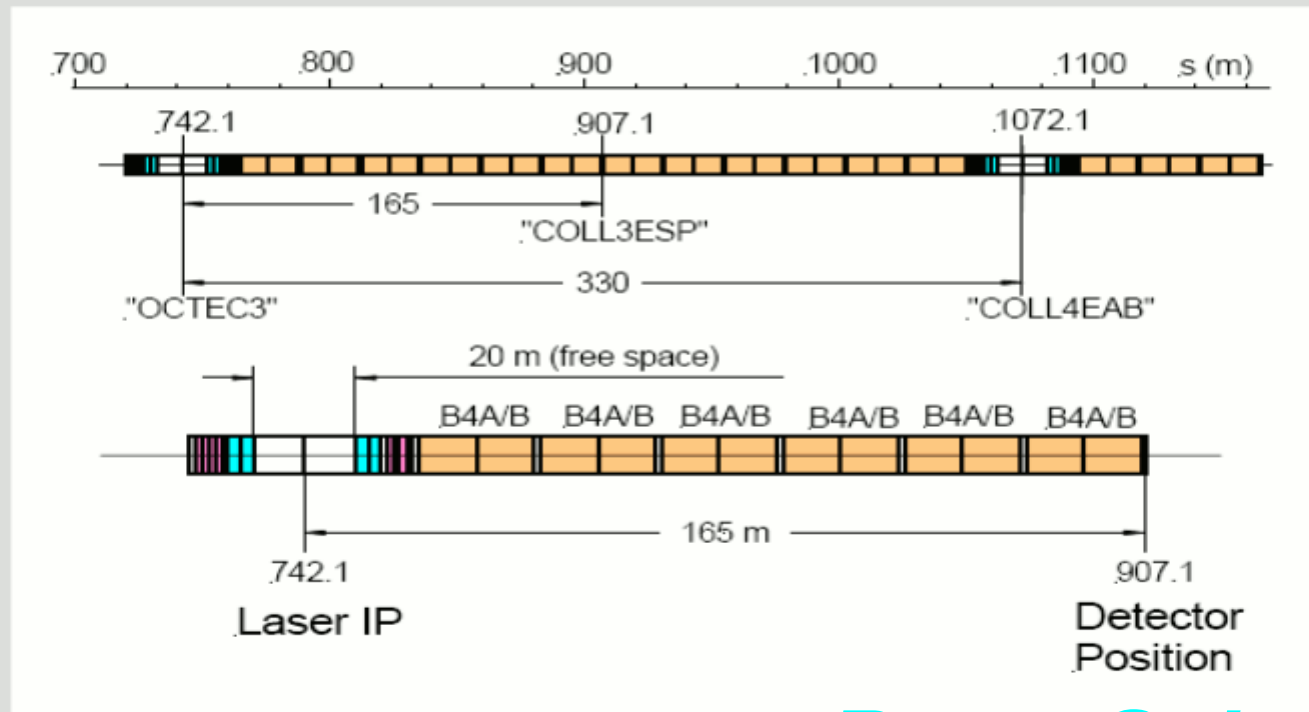
Peak field 35 times stronger

**Andrei Seryi**

**Observed reduced damage in FFTB  
with CLIC-like bunches!!!!**

# Upstream polarimetry, fully devised

## BDS detail behind $s = 742$ m



Laser IP at  $s = 742$  m

Compton electron detector at  $s = 907$  m

(behind 12 dipoles, as shown, or behind a lesser number of dipoles, but with reduced performance)

**Peter Schuler**

# *Post-IP polarimetry*

## *\* IP Depolarization:*

*R. Assman, F. Zimmermann(SL-2001-064) 6.2%*

*Anthony Hartin (CLIC'08) 4.8%*

*\* Need post-IP polarimetry? which resolution? Challenge is served.*

---

---

# *Common session with detectors (1)*

*Emmanuel Tsesmelis: MDI WG in full power*

*Lucie Linsen: Conical mask? graphite blocks?*

*Adrian Vogel: Pile-up challenging but not  
hopeless*

*Daniel Schulte: New backgrounds for 500GeV  
and 3TeV are ready*

*Question: common CLIC-ILC crossing angle for  
studies?*

---

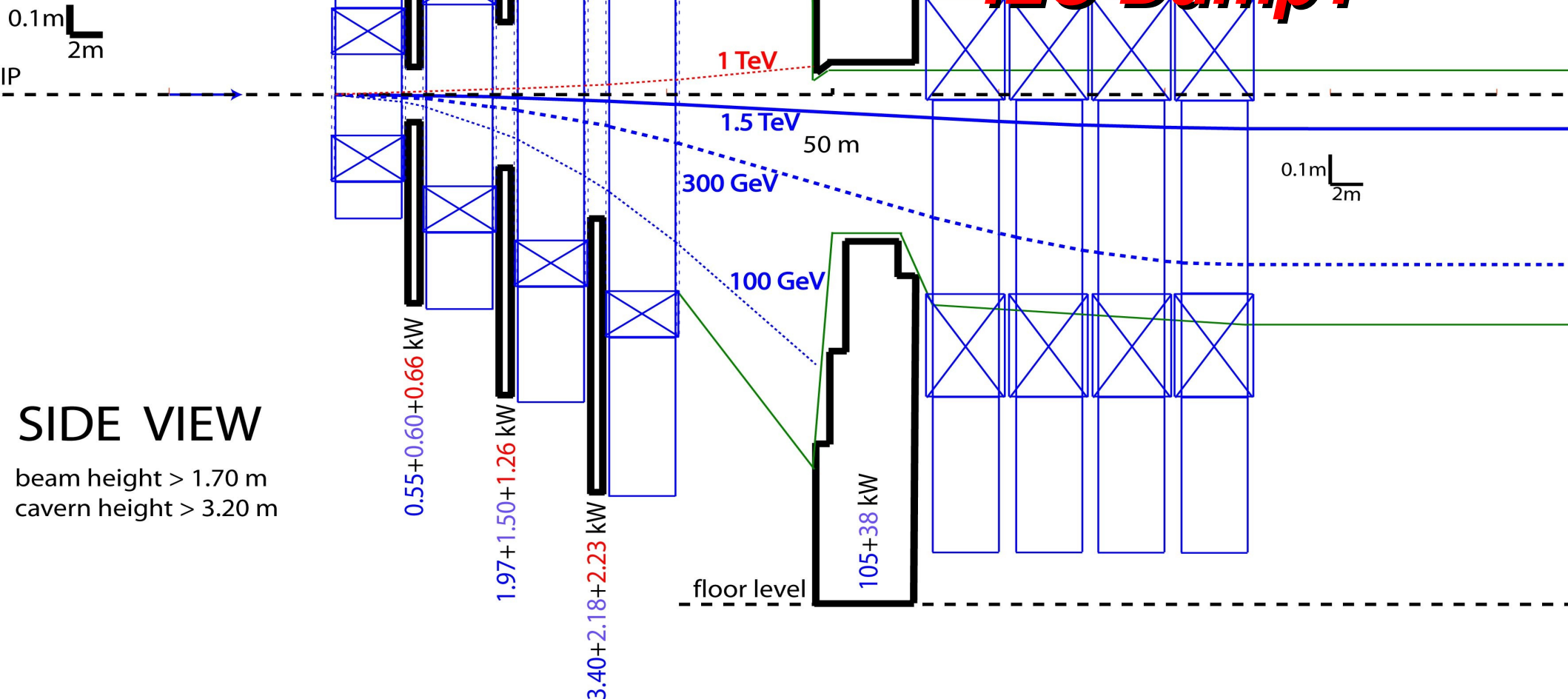
---

# Excellent review of post-collision line

**Konrad Elsener**

**polarimetry?**

**ILC Dump?**



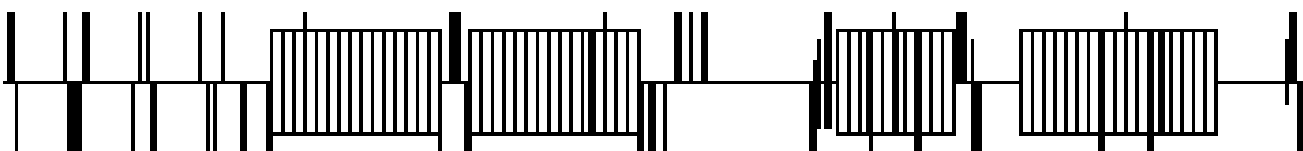
**SIDE VIEW**

beam height > 1.70 m  
cavern height > 3.20 m



# *Andrei's revolutionary proposal*

- \* Double  $L^*$*
  - \* QD0 gets out of the detector ->  
lower noise, easier stabilization*
  - \* 20-40% lower luminosity but*
  - \* let's work together to optimize it!!!!*
- 
-



CLIC BDS

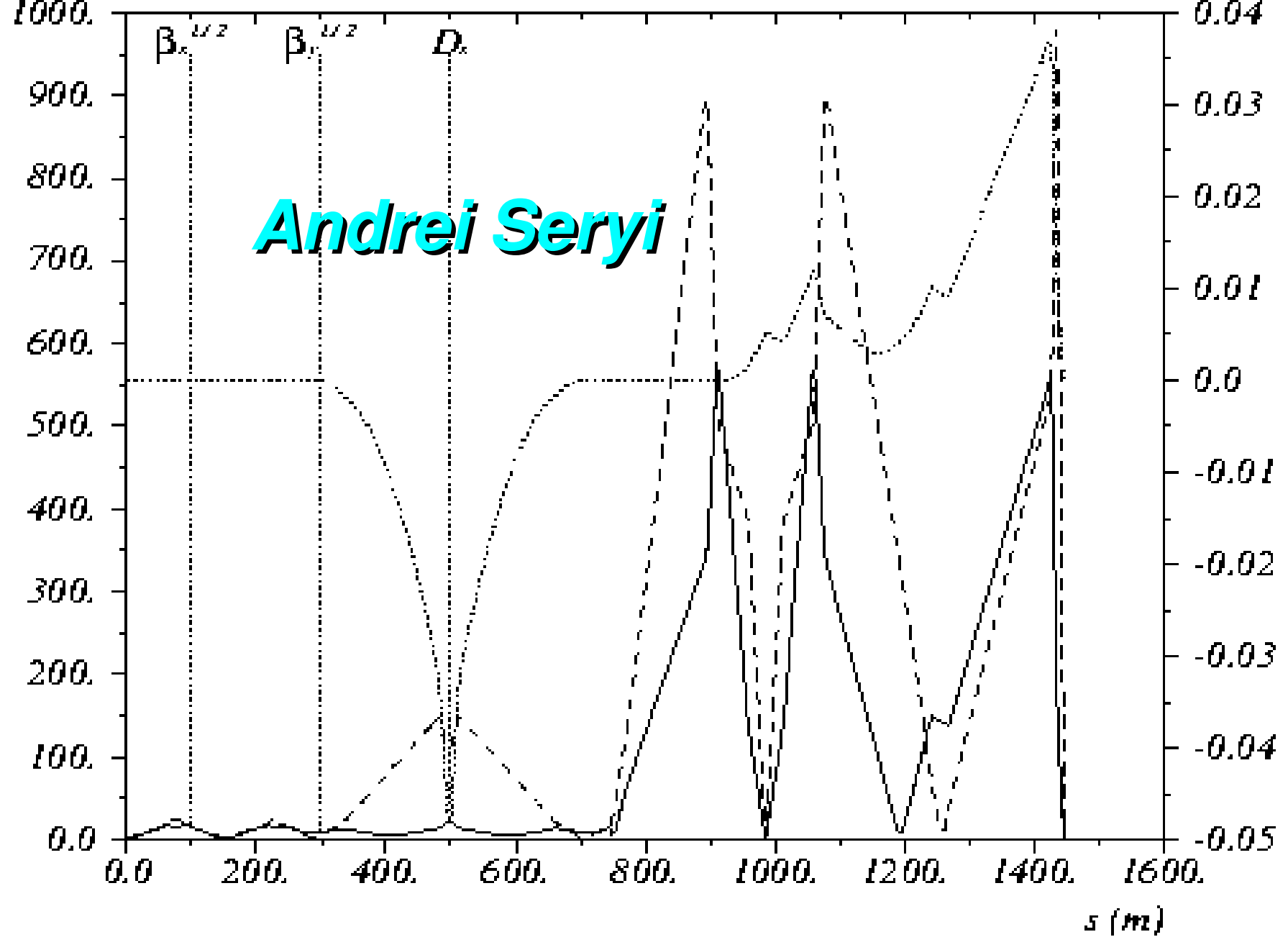
Windows NT 4.0 version 8.23/06

09/10/08 08.32.23

$\beta^{1/2}$  ( $m^{1/2}$ )

$D_s$  (m)

**Andrei Seryi**



# *Alignment and FFS tuning*

*(common session with BD & TF)*

*Glen White, Erik Adli, R. Tomas, Andrea Jeremi*

*\* Critical subject for CLIC*

*\* Lots to learn from all test facilities  
(present and future)*

*Prize:* *The faster algorithm gets a  
bottle of Champagne!!!*

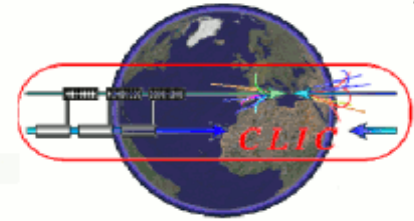
---

---



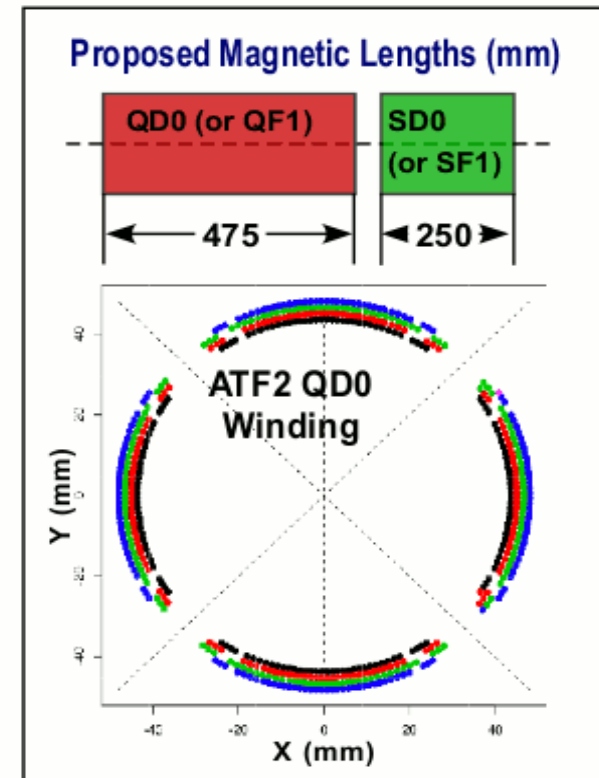
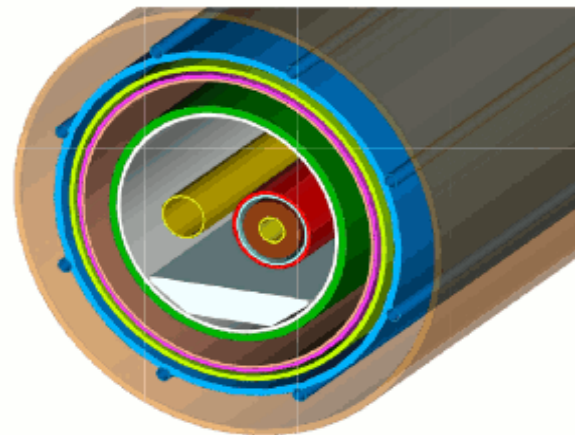
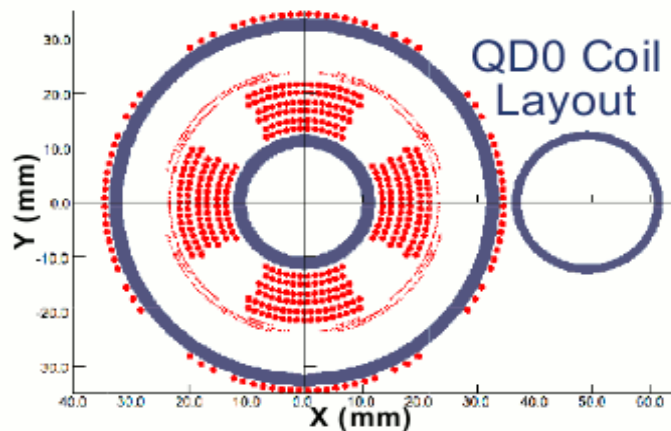
# CLIC08 Workshop at CERN

14-17 October 2008



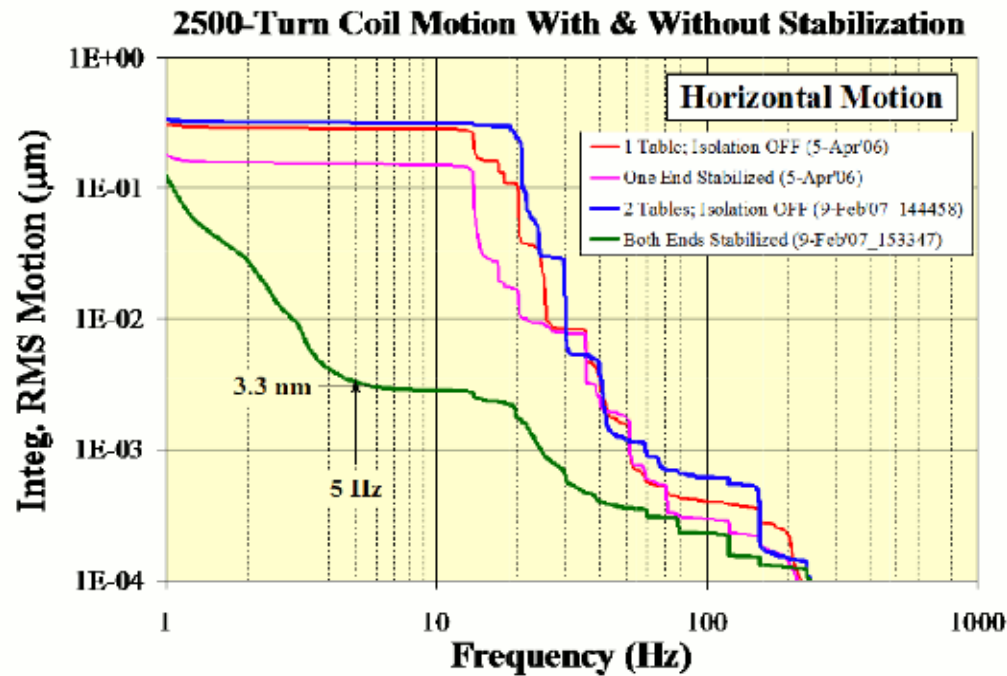
## Superconducting Final Doublets for ILC, ATF2 and Thoughts for CLIC

Brett Parker, BNL



# *Superconducting FD quadrupoles*

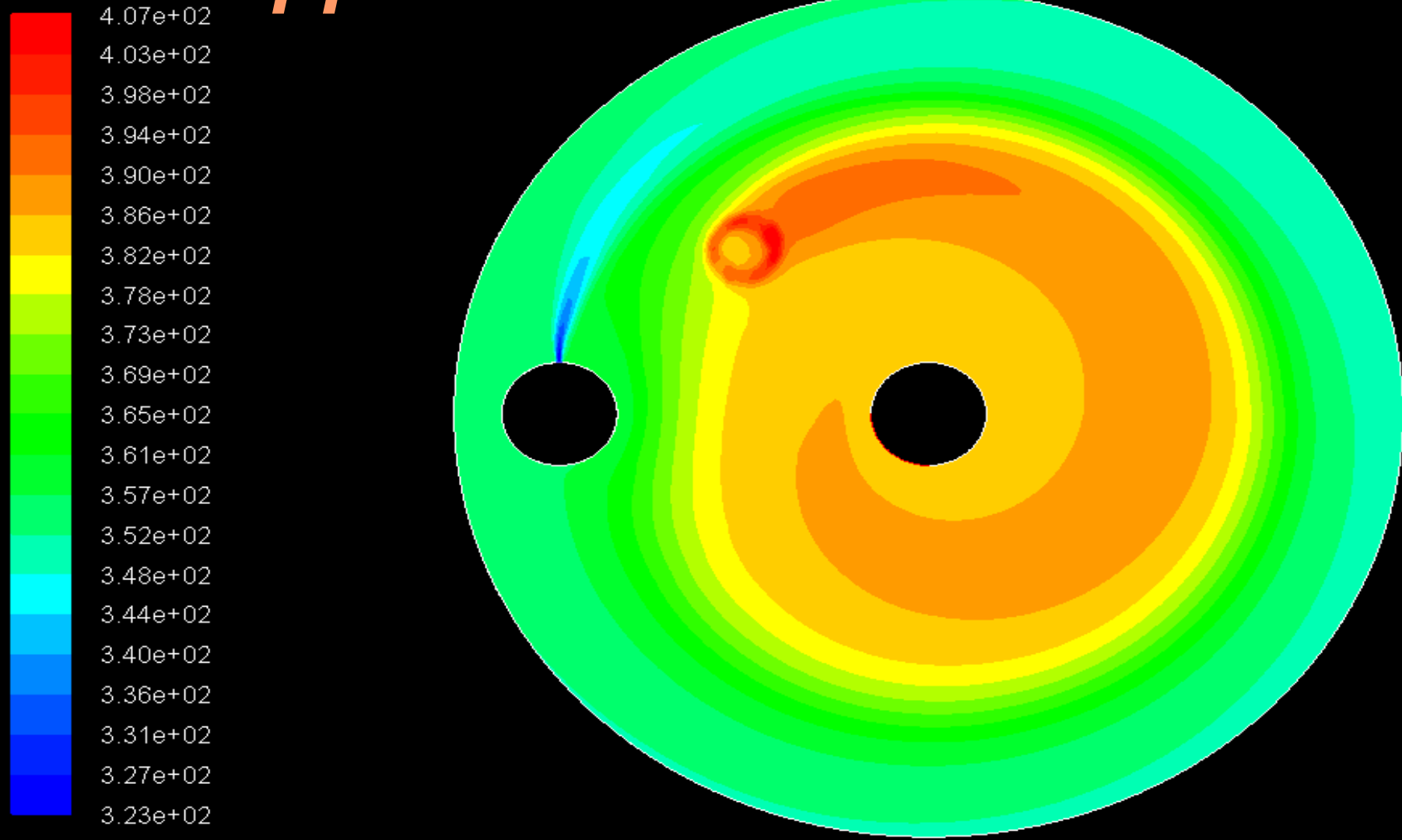
Animesh Jain & Ping He (Brett parker)



*Very promising research on SC coil stabilization!!!*



# *The 18MW ILC water dump should be applicable to CLIC!*



**Satyamurthy Polepalle, Raymond Arnold, Dieter Walz,**

**John Amann**

Sep 05, 2008

FLUENT 6.3 (2d, pbns, rngke, unsteady)

Contours of Static Temperature (k) (Time=2.2150e+02)

*Summary of the summary...*



*Thanks to all the speakers for their  
high quality work and unprecedented  
level of involvement!*

