

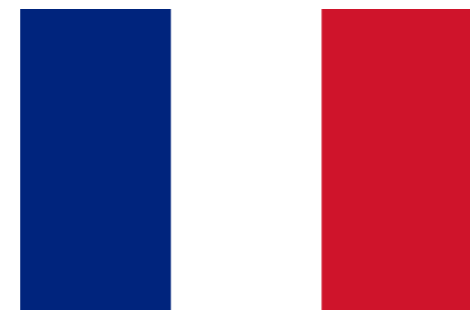
# DITANET

The development of developing beyond-state-of-the-art diagnostic techniques for existing and future accelerator facilities.

Diagnostic Techniques for particle Accelerators - a European Network

## Benjamin CHEYMOL

Fellow since December 1, 2008



Origin: Aurillac, France  
 Age: 30  
 Background: Master in Subatomic Physics  
 Université Blaise Pascal, France  
 Current position: Marie Curie fellow, CERN  
 PhD student  
 Université Blaise Pascal  
 Clermont Ferrand, France

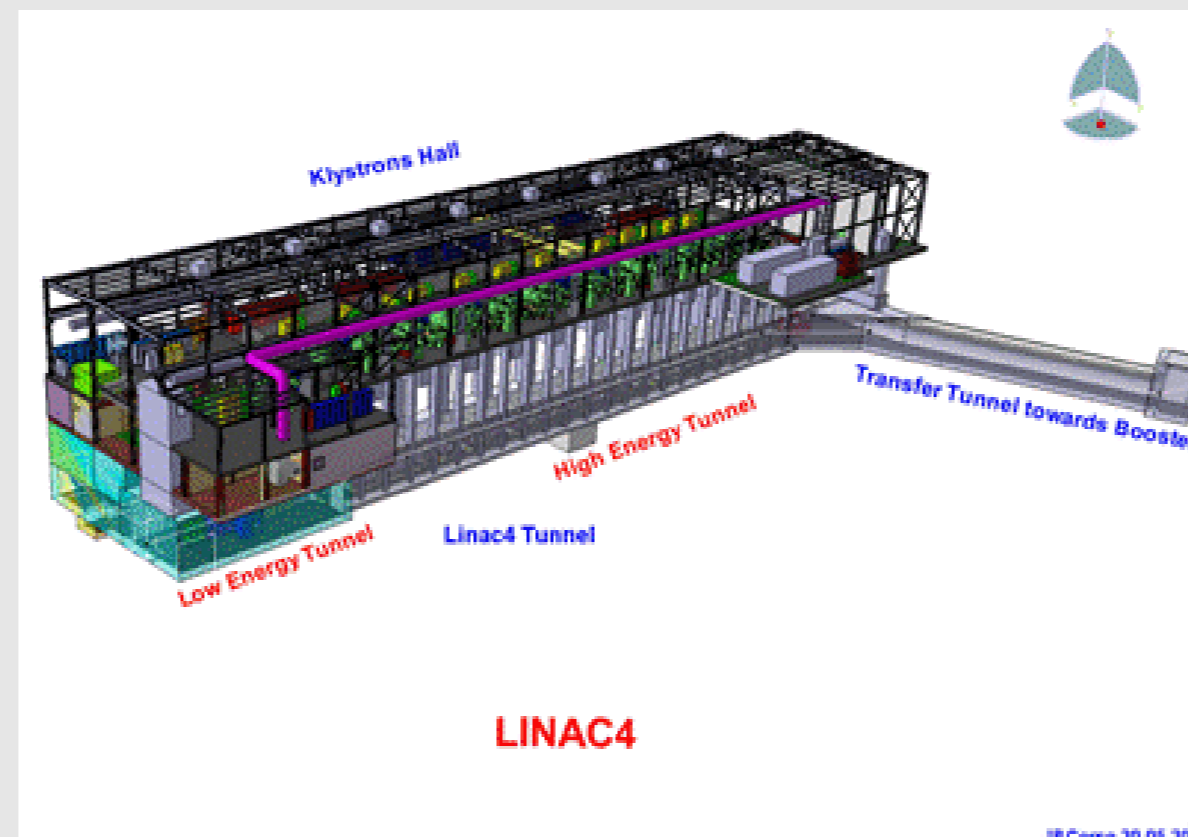
### Training:

- General English courses at CERN
- DITANET school on Beam Diagnostics, London - England, March 2009
- FLUKA course, Mumbai - India, October 2009
- JUAS school of accelerator physics, Archamps - France, January 2010

### Conferences and Workshops:

- DIPAC09, Basel - Switzerland, May 2009
- IPAC10, Kyoto - Japan, May 2010

## Beam profile and Emittance measurement for LINAC4

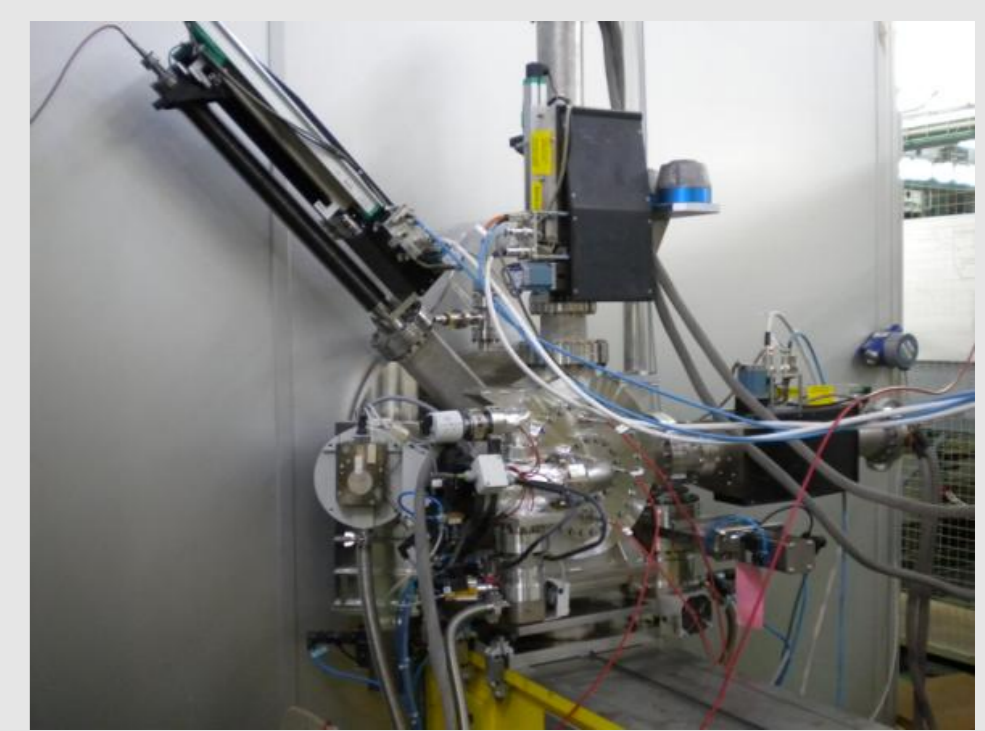


### LINAC4

The goal of the Linac4 project is to build a 160 MeV  $H^-$  linear accelerator replacing Linac2 as injector to the PS Booster (PSB) and to modify the PSB injection for the Linac4 beam. The beam brightness out of the PSB is expected to increase by a factor of 2

### Beam profiles monitor

Several SEM grid and wire scanner are positioned along the linac to measure the beam profile.



### Beam emittance measurement

During the commissioning phase, an emittance measurement is needed at several position. For this a Slit and grid has been developed.

## Adam JEFF

Fellow in BE/BI since June 1, 2009



Origin: Barcelona, Spain  
 Age: 28  
 Background: MPhys in Physics with Planetary and Space Physics, Aberystwyth University, UK  
 Current: Marie Curie Fellow, CERN  
 PhD student, University of Liverpool, UK

### Training:

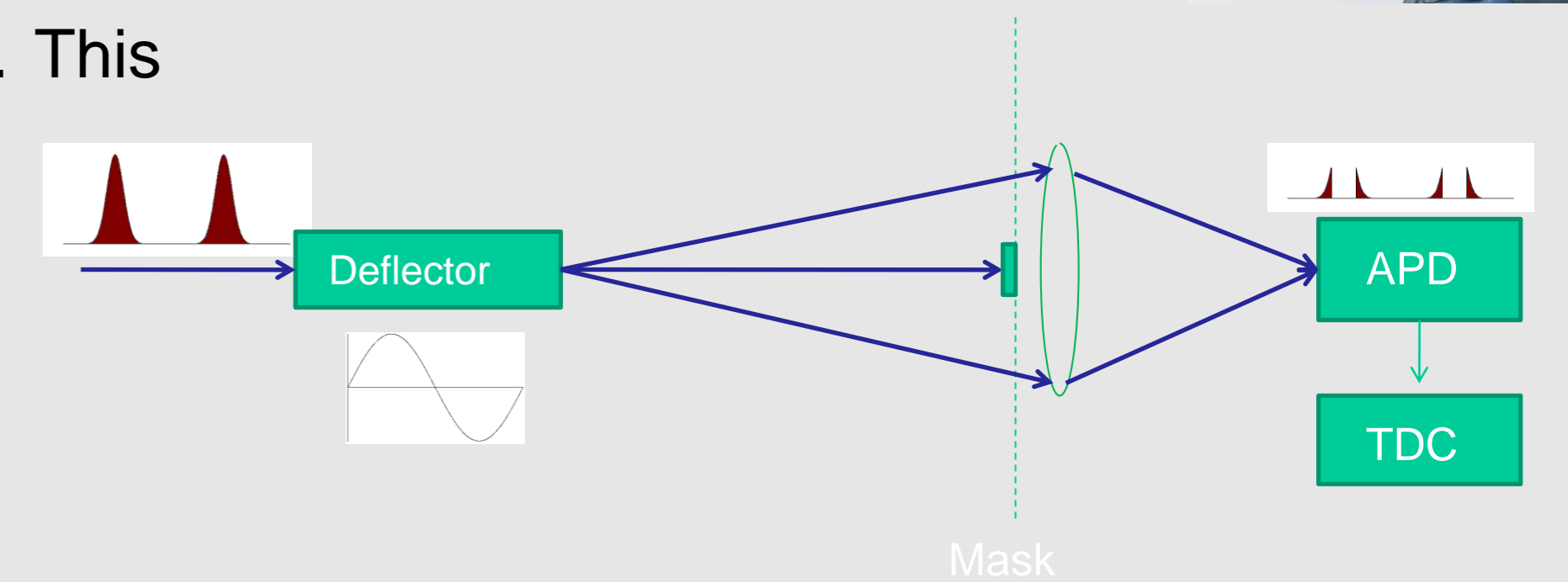
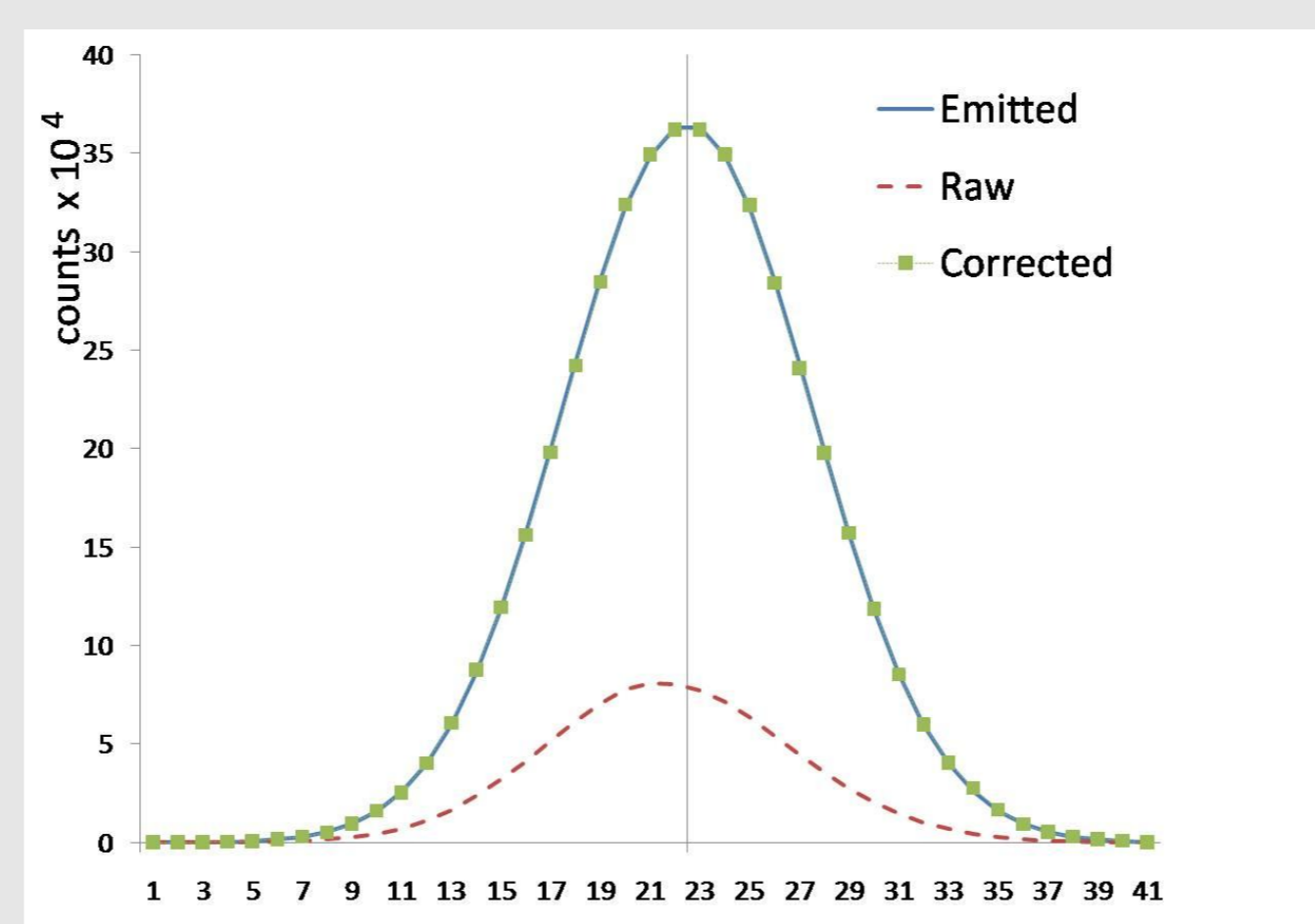
- General French courses at CERN
- JUAS school of accelerator physics, Archamps, France, January 2010
- DITANET school on complementary skills, Liverpool, UK, March 2010

### Conferences and Workshops:

- Photonics Europe, Brussels, April 2010
- IPAC10, Kyoto - Japan, May 2010
- DITANET workshop on Longitudinal Diagnostics, Cockcroft Institute, UK, July 2010

## A Longitudinal Density Monitor for the LHC

Synchrotron radiation is usually associated with electrons. The protons in the LHC emit a small amount because they have such high energy. This can be used to measure the bunch structure.



A novel gating scheme is necessary to measure the very small proportion of particles drifting out of their bunches, without being blinded by the light from the bunch.

## Maja OLVEGÅRD

Fellow in BE/BI since March 1, 2009



Origin: Linköping, Sweden  
 Age: 29  
 Background: M.Sc. in Physics,  
 University of Gothenburg, Sweden  
 Current position: Marie Curie Fellow, CERN  
 Ph.D. student,  
 University of Uppsala, Sweden

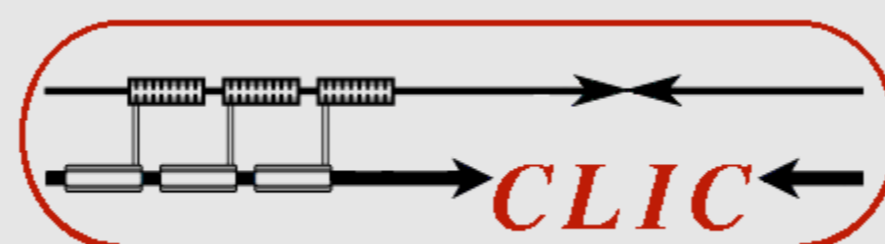
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### Conferences and Workshops:

- DIPAC09, Basel - Switzerland, May 2009
- IPAC10, Kyoto - Japan, May 2010
- CLIC09 Workshop, CERN, October 2009
- CLIC Beam Instrumentation, CERN, June 2009
- CLIC/CTF3 Collaboration Technical Meeting, CERN, May 2010

## Beam profile monitors for the CLIC Test Facility

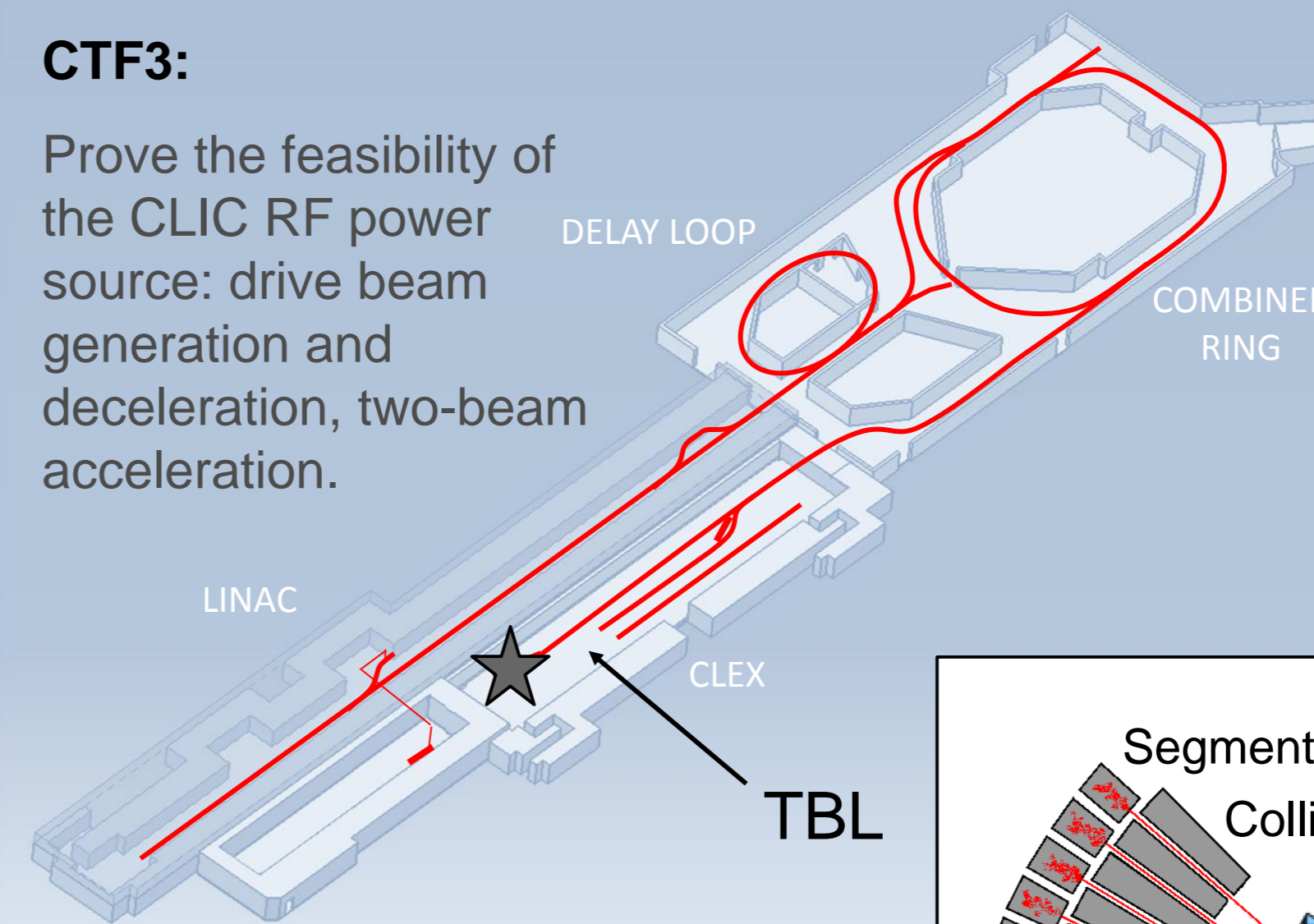


### The Compact Linear Collider:

A study for a future linear  $e^-e^+$  collider (3 TeV) to complement LHC with precision measurements. General guidelines of cost and power consumption efficiency require 100 MV/m accelerating gradient, which will be achieved using a two-beam acceleration scheme.

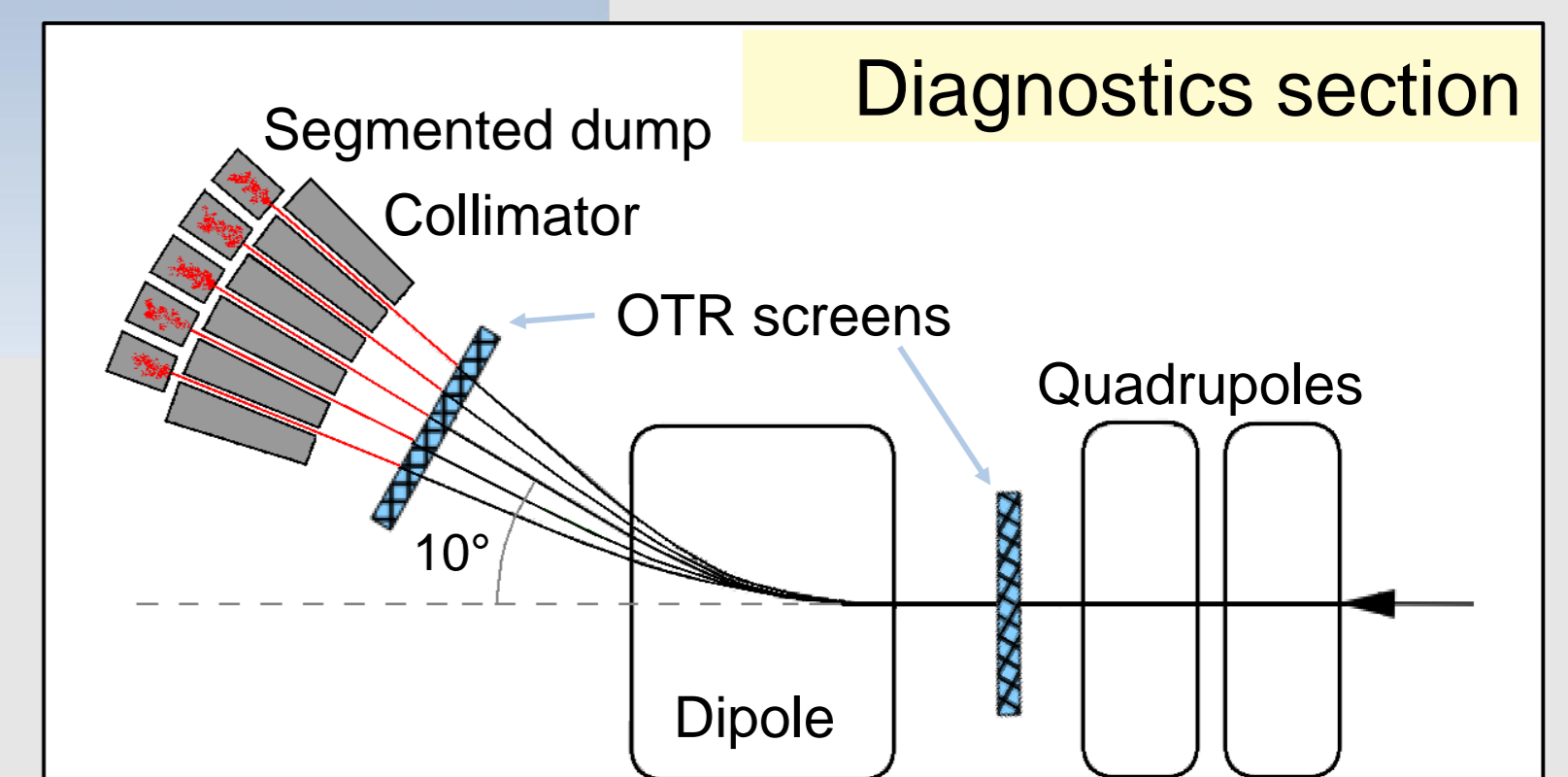
### Diagnostics at TBL:

- detect high energy transient, due to full loading of cavities
- measure beam energy loss
- measure large intra-bunch energy spread
- transverse profile and emittance of highly decelerated beam



### The Test Beam Line:

Purpose: study the behavior of the drive beam in a small-scale CLIC decelerator



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