

The CLIC logo, consisting of the letters "CLIC" in a red, serif font, with two blue arrows pointing towards each other from above and below the text.

# Damping ring layouts for CDR

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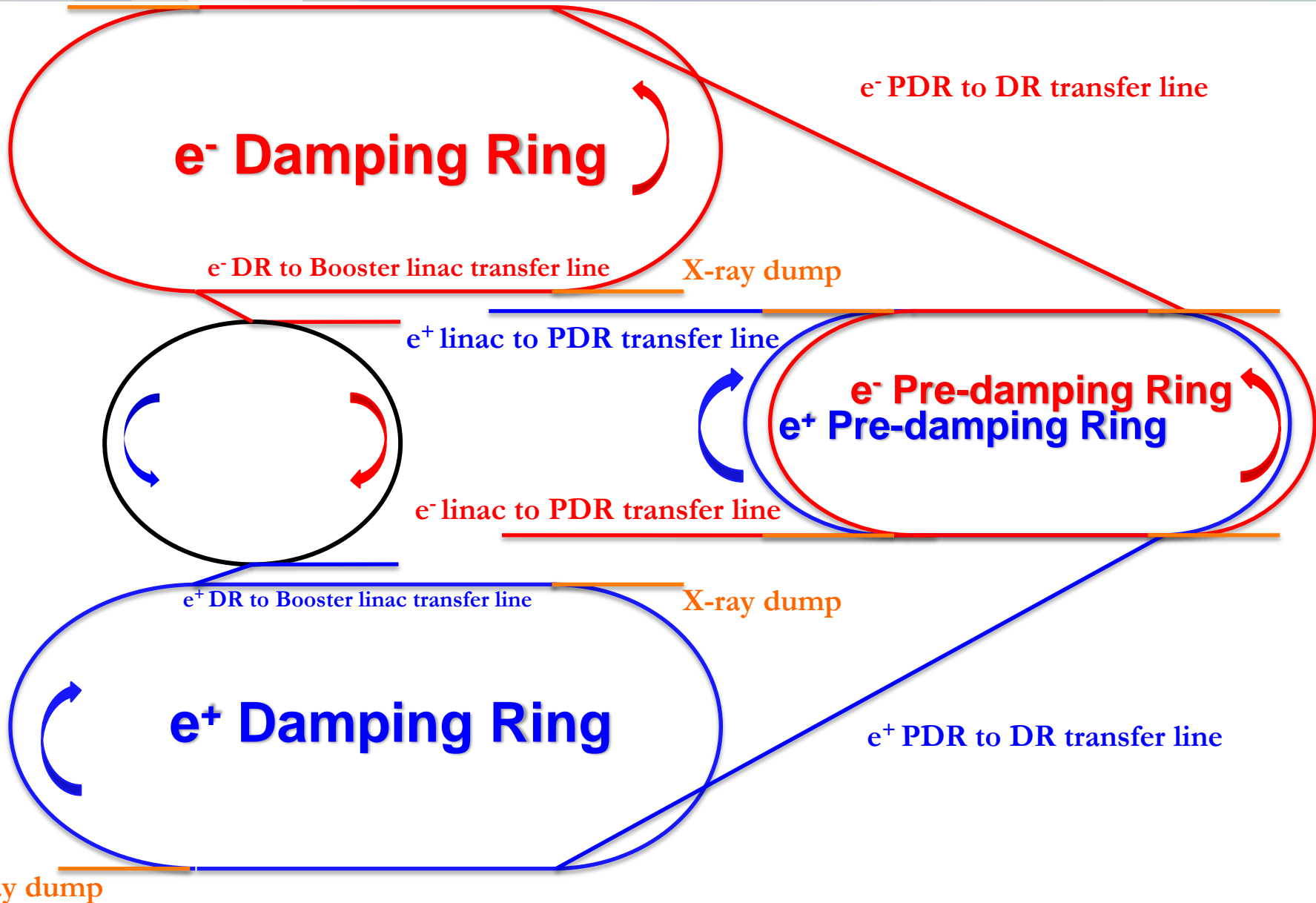
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# Damping Rings Complex layout

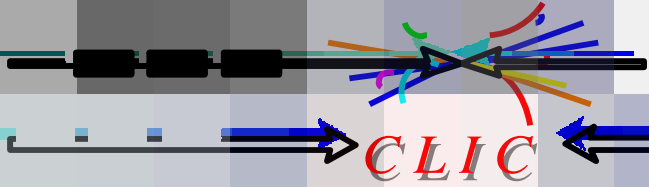


X-ray dump

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# Damping rings



## ■ 4 rings

- $e^+$  and  $e^-$  pre-damping rings (PDR) with
  - Circumference of 383.95m
  - Race-track shape with long straight section (LSS) length of  $\sim 96.5$ m and arcs length of  $\sim 95.5$ m (radius of  $\sim 30.4$ m)
  - 2 photon dumps/ring at the end of the LSSs downstream of the wigglers
  - They may be stacked vertically to occupy the same tunnel, but
    - Transfer line to the damping rings may not be realistic
    - Interference of the photon dumps with injection and extraction line from the other ring may be an issue
- $e^+$  and  $e^-$  damping rings (DR) with
  - Circumference of 420.76m
  - Race-track shape with long straight section (LSS) length of  $\sim 91.5$ m and arcs length of  $\sim 119$ m (radius of  $\sim 37.8$ m)
  - 2 photon dumps/ring at the end of the LSSs downstream of the wigglers

## ■ Damping ring complex lines

### □ 8 transfer lines

- Two lines from injection linac to  $e^+$  and  $e^-$  PDR
- Two lines from  $e^+$  and  $e^-$  PDR to DR
- Two lines from  $e^+$  and  $e^-$  DR to Delay loop
- Two lines from Delay loop to booster linac
- None of these lines is designed yet and the layout of the complex strongly depends on them

## ■ Delay loop

- Proposal to have only one delay loop between the damping rings and recombine different species in consecutive delay loop turns
  - Impact on the length of the lines from Delay loop to booster linac which have to absorb the length difference equal to the delay loop circumference
- Racetrack with circumference of 210.4m
  - It can be reduced if trains are injected asymmetrically into the DR
- Relatively long arcs ( $\sim 95\text{m}$ ) and short LSS ( $\sim 20\text{m}$ )