

EUROPEAN
PLASMA RESEARCH
ACCELERATOR WITH
EXCELLENCE IN
APPLICATIONS



EuPRAXIA@SPARC_LAB TDR Machine Layout

Andrea Ghigo, INFN

9th EuPRAXIA@SPARC_LAB Review Committee Meeting, LNF June 16-18, 2025



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101079773

In this chapter the layout of the entire infrastructure is reported:

1 Machine layout

1.1 EuPRAXIA layout

1.1.1 Introduction to EuPRAXIA layout

1.2 Building Functional layout 11

1.2.1 General description

1.2.2 The accelerator and undulator tunnel

1.2.3 Modulator and power supplies area

1.2.4 Laser Rooms

1.2.5 Beam lines and Users area

In this paragraph the layout of the accelerator is reported:

1.3 The machine layout

1.3.1 Introduction

1.3.2 S-band injector

1.3.3 X-band linac

1.3.4 Plasma accelerating section

1.4 Free Electron Laser radiation

1.4.1 The FEL undulators

1.4.2 FEL radiation beam transport lines

1.4.3 End station and user area

- 1.1 Layout of the accelerator in the building
- 1.2 Functional layout
- 1.3 Layout of the accelerator and beam lines
- 1.4 S-band injector
- 1.5 Layout of the X-band accelerator
- 1.6 Area dedicated to plasma acceleration
- 1.7 Free Electron Laser undulators
- 1.8 Schematic layout of the FEL beamlines

Ground floor

Accelerator Tunnel

Modulator & power supply area

Undulator tunnel

FEL user area

Experimental Areas

Laser Rooms

First floor

Control room

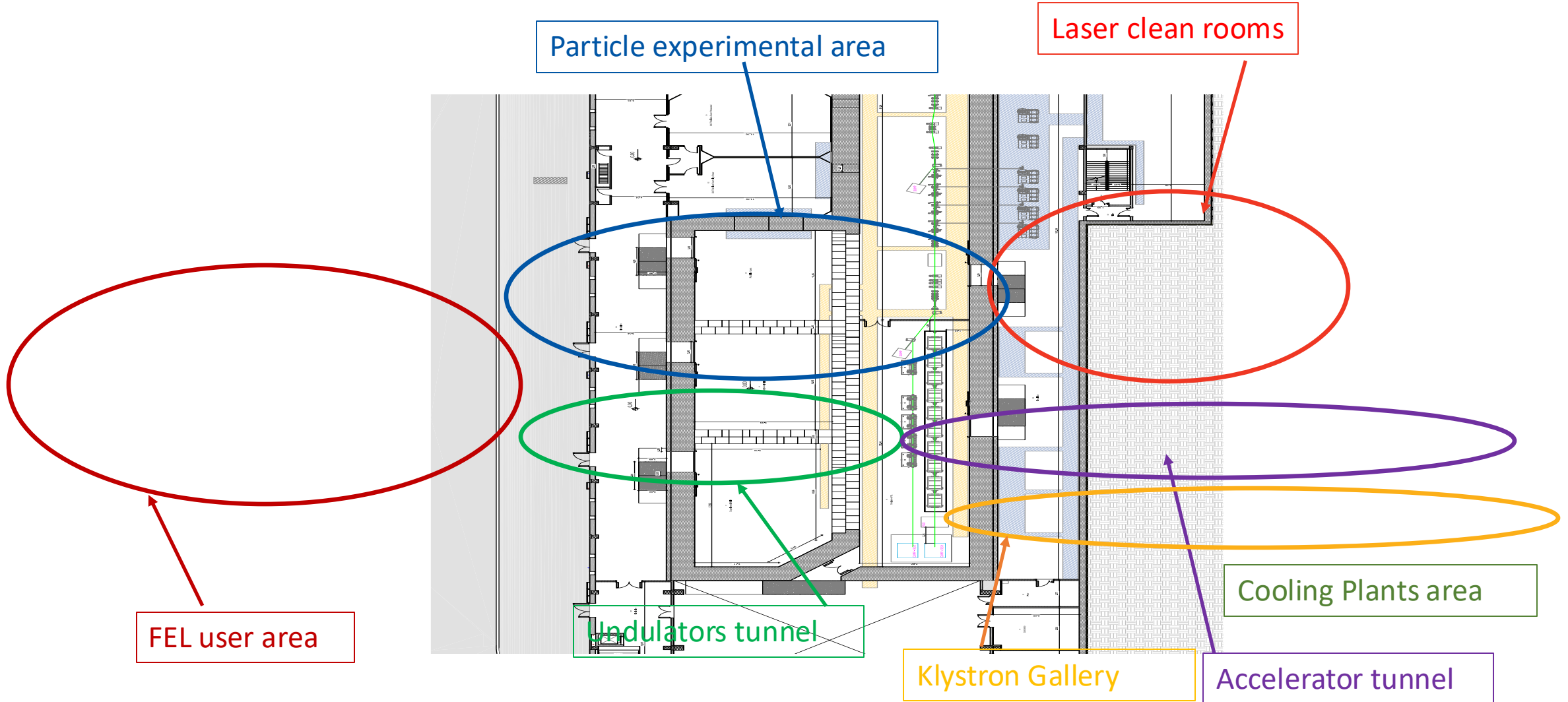
Laser Rack room

UTA corridors

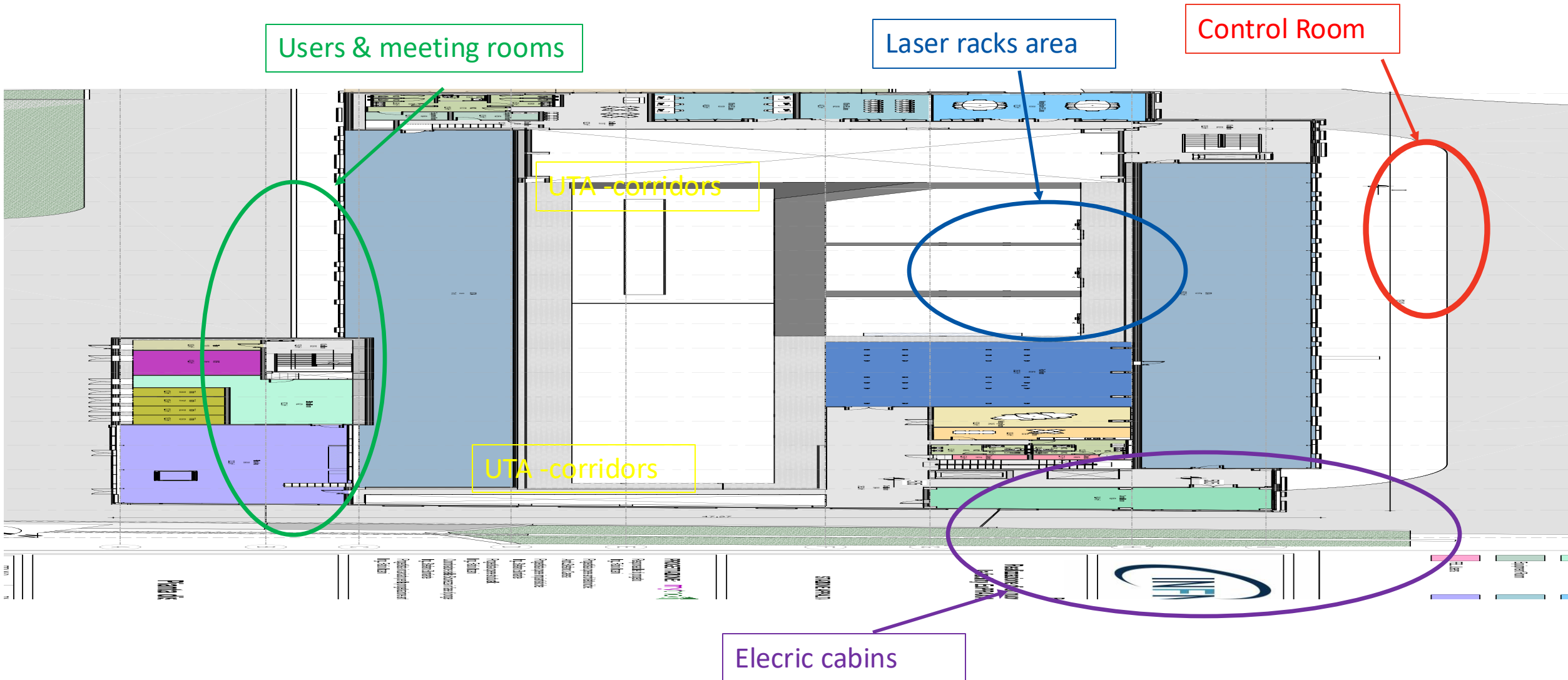
Users offices & meeting room

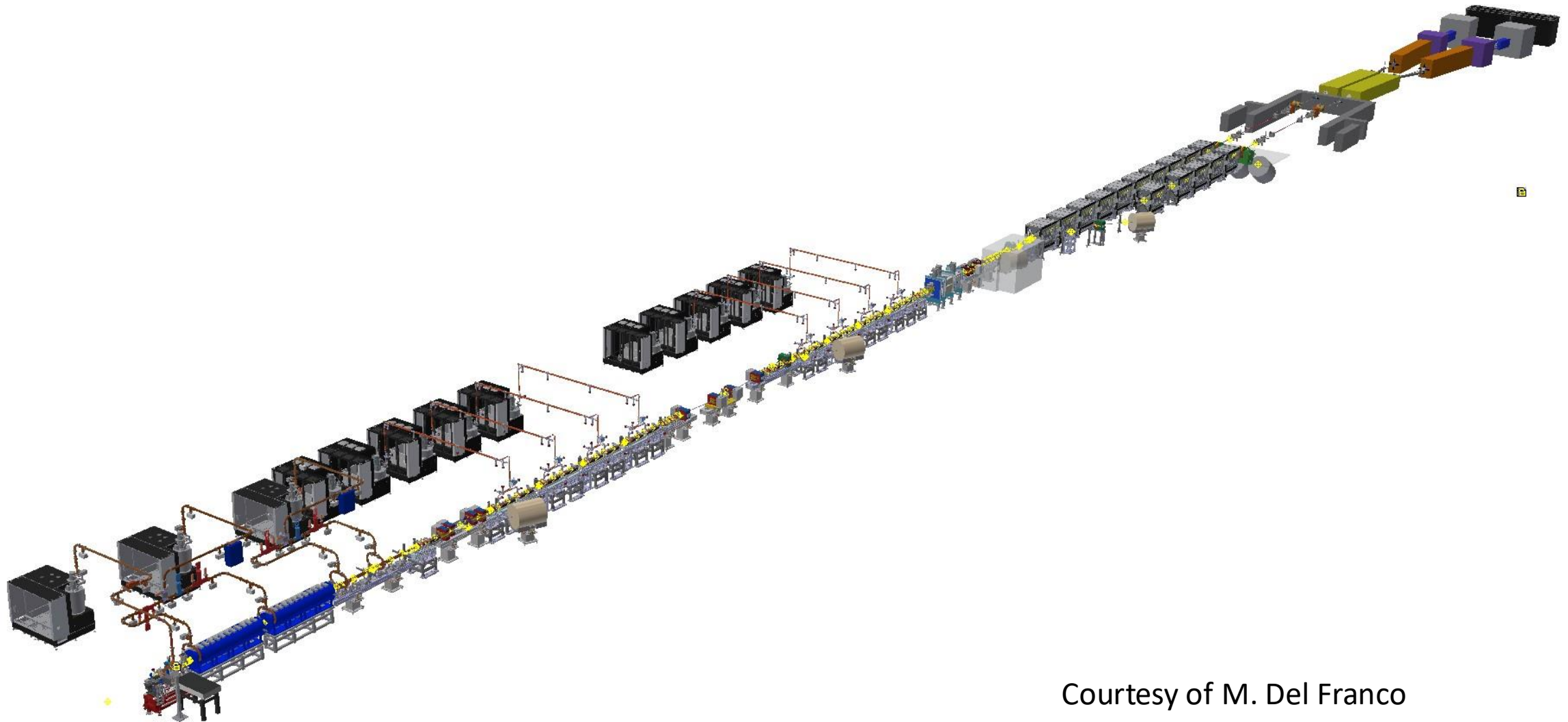
Break area

Terrace



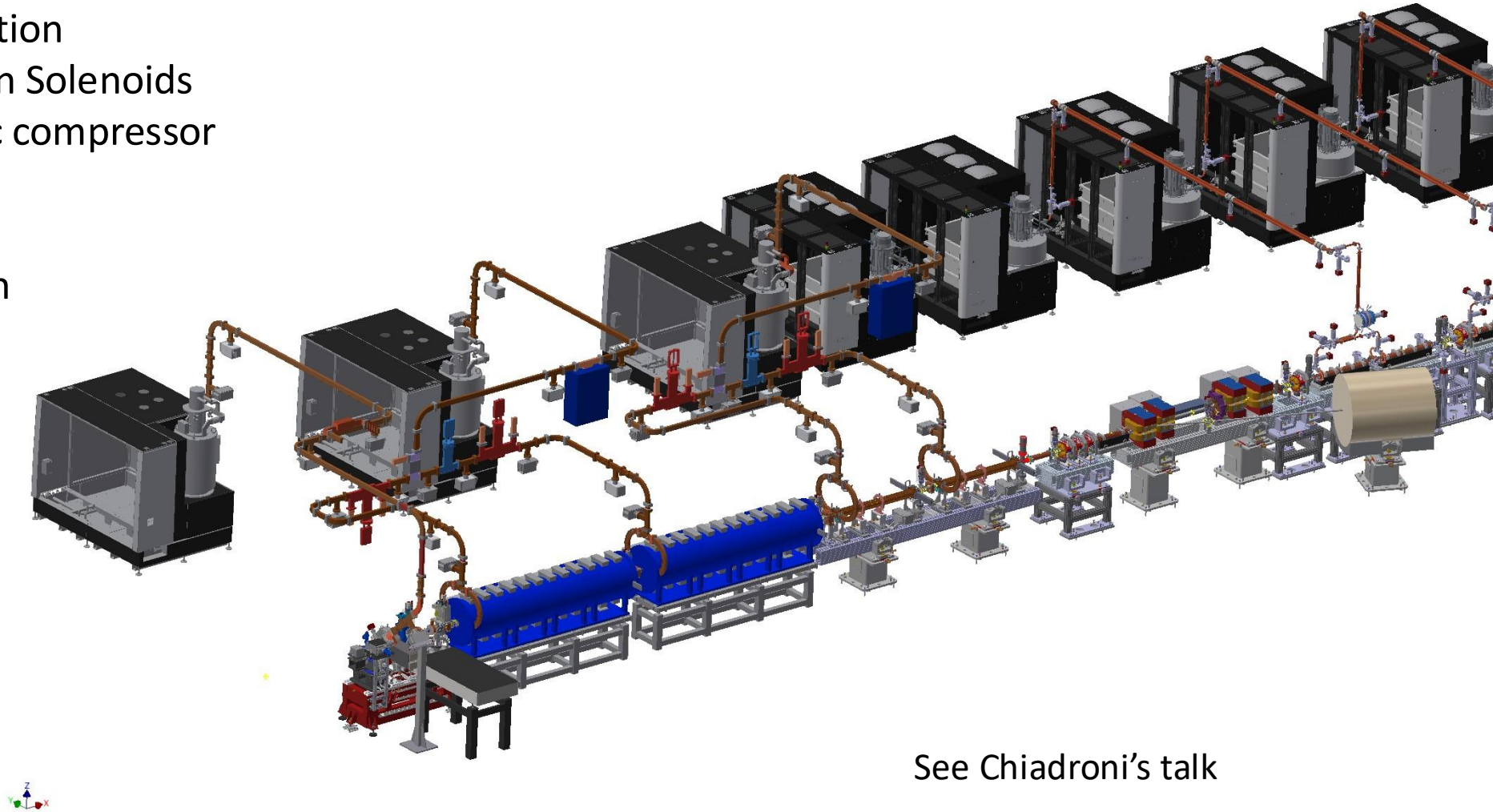
Courtesy of S.Incremona



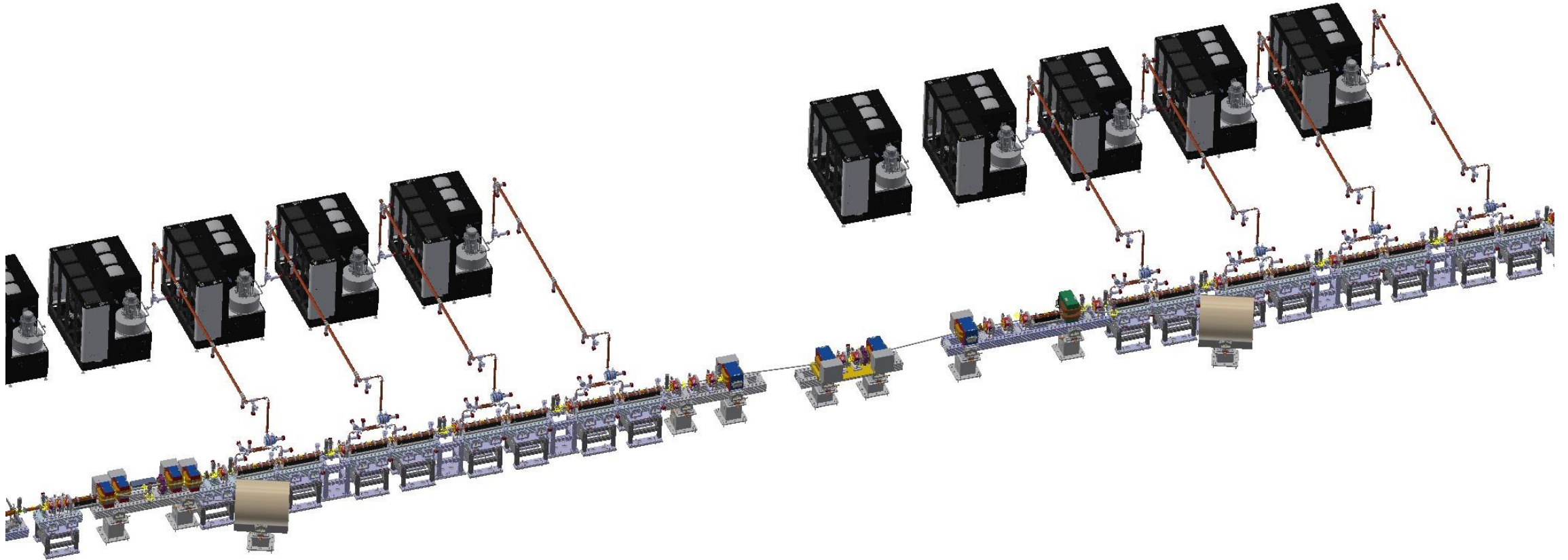


Courtesy of M. Del Franco

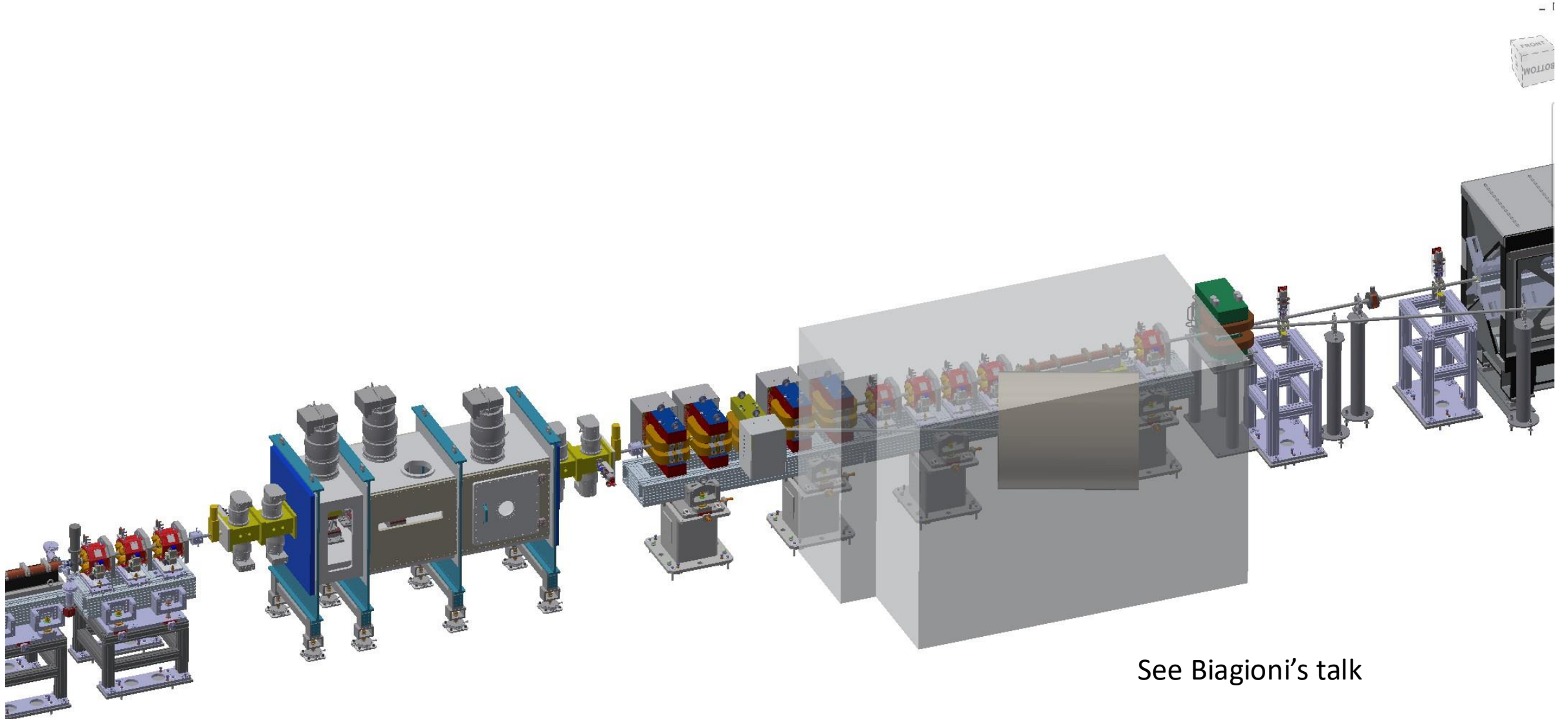
- S-band photogun
- S-Band accelerating section
- First accelerating section Solenoids
- Laser heater – magnetic compressor
- X-band linearizer
- Injector diagnostics
- RF modulator & Klystron
- RF waveguide network



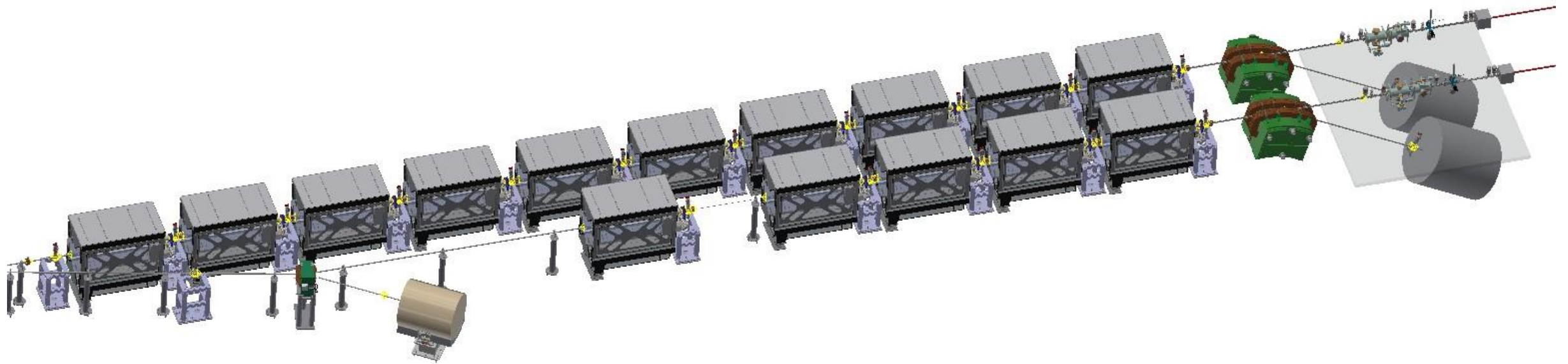
See Chiadroni's talk



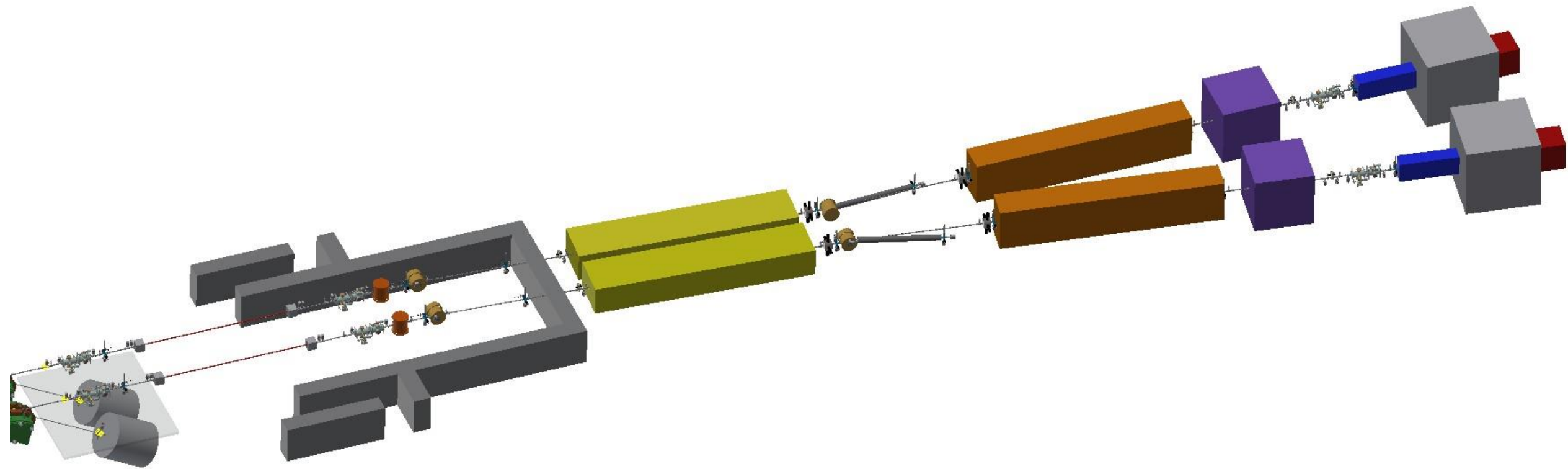
See Alesini's talk



See Biagioni's talk



See the Giannessi's talk



See Villa's talk



Thanks for the attention