

2-module Test Box in Saga

- Purpose
- Design
- Laser system
- Laser test at TUAT

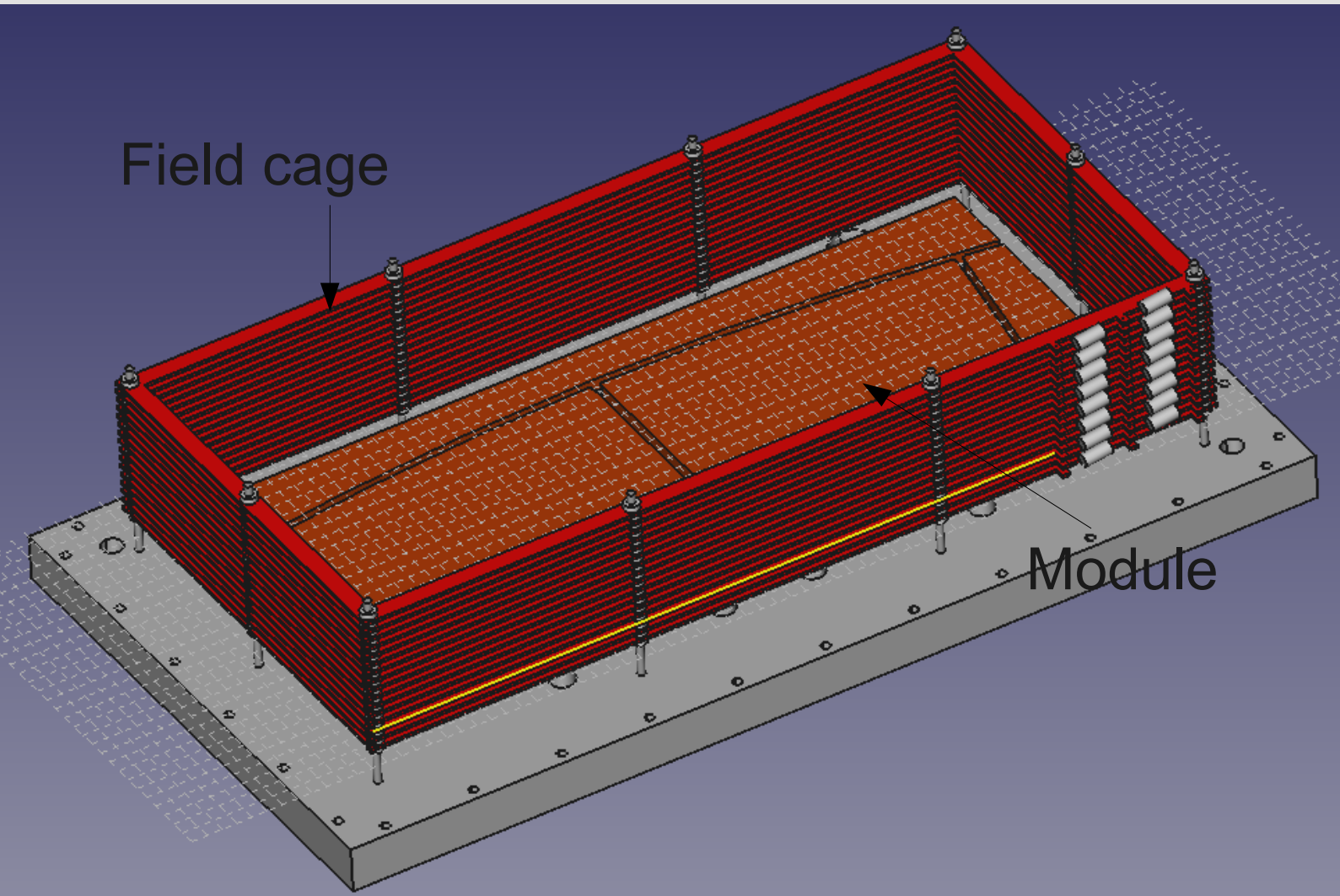
Purpose

- Small realistic testing environment
- 2 modules to observe boundary effects
- Possibilities to test:
 - Electronics installation
 - Laser usage
 - Cooling
 - ...

Characteristics

- 2 modules (with support frame similar to LP1)
- Dummy plates simulating surrounding modules
- Field cage with $\sim 10\text{cm}$ drift volume
- Laser system

Design of the Test box

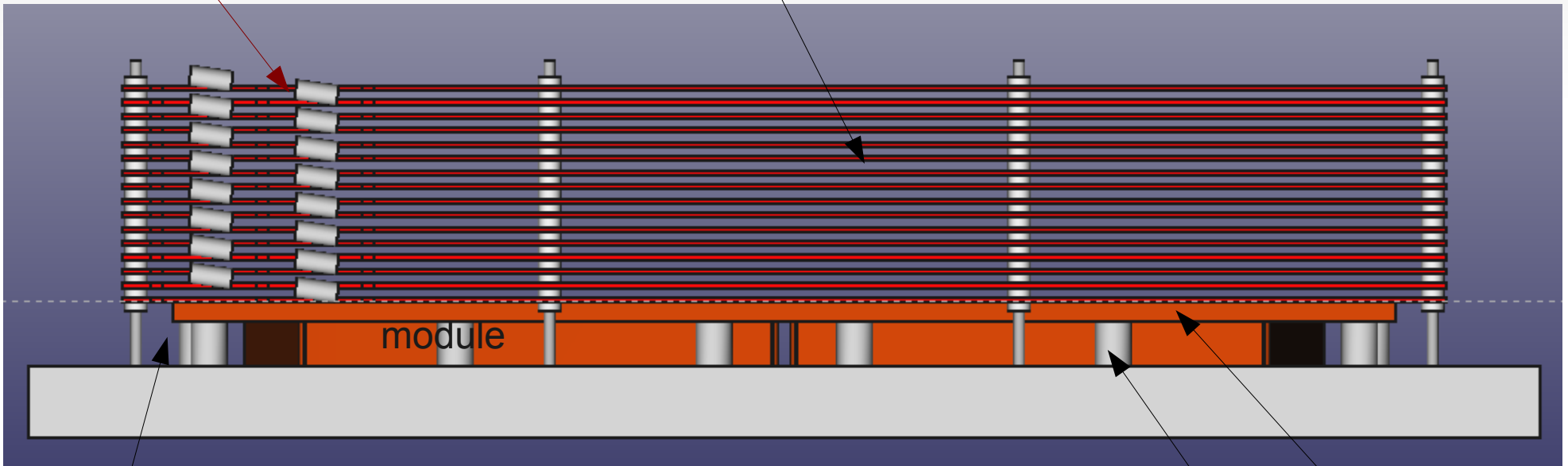


- $\sim 65 \times 35 \times 15 \text{ cm}^3$
- 10cm drift
-

Side view

4mm gaps between
cage plates
=> laser opening

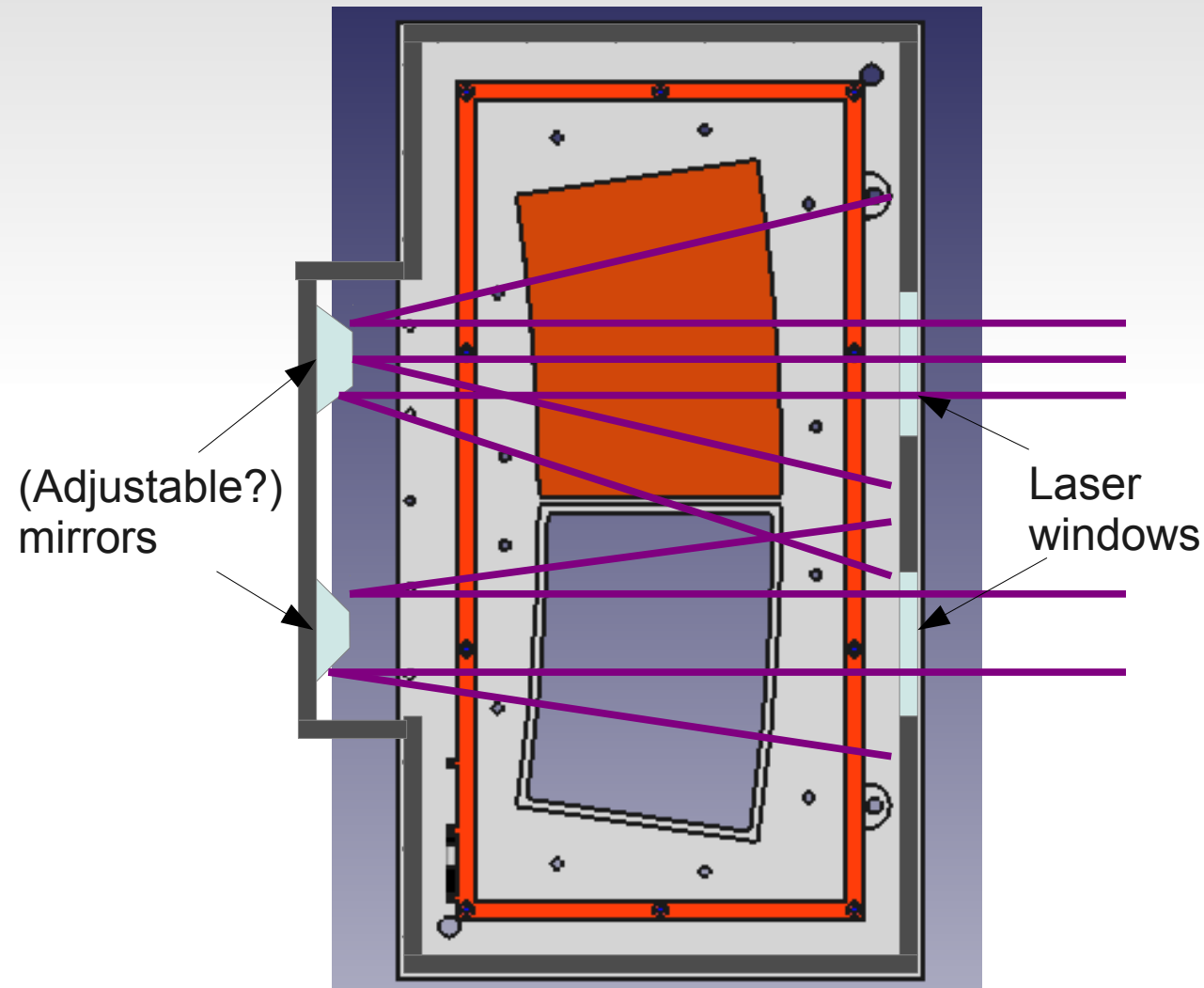
Cu field
cage



Ceramic
support posts
12/03/26

Dummy GEM plates
with same supports
as in LP1

Proposed Laser Concept



- Laser operation from outside
- Perpendicular injection
- Mirror configuration to establish
 - Rotating mirrors?
 - Several fixed angle?
- Laser ends on wall outside the field cage
 - Horizontal alignment
 - Reflected tracks 6

12/03/26

2 Module Test box in Saga
Philippe Gros, Saga University

Laser Sytem

- Full laser system outside or on the cover
- Number of configurations limited
- Required angular precision $<1^\circ$ (laser between field cage plates)
- Fixed mirrors
 - + robust
 - - fixed configurations
 - - need robust installation
- Adjustable mirror
 - + more angles
 - - how to adjust?
 - - takes more space
 - - keep track of end point...

Readout Electronics

- 2 modules
 - ⇒ ~10,000 channels total (current size)
- Boundaries
 - need at least 2-3,000 equipped channels
- S-ALTRO16
 - >4 units of readout
 - Not available this year (?)
- ALTRO first
 - New GEM on old modules

Laser test at TUAT

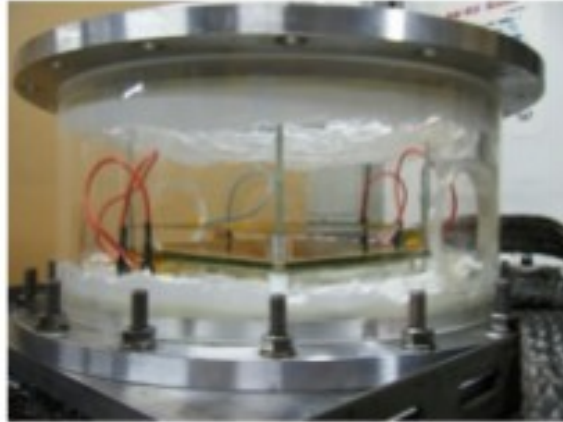
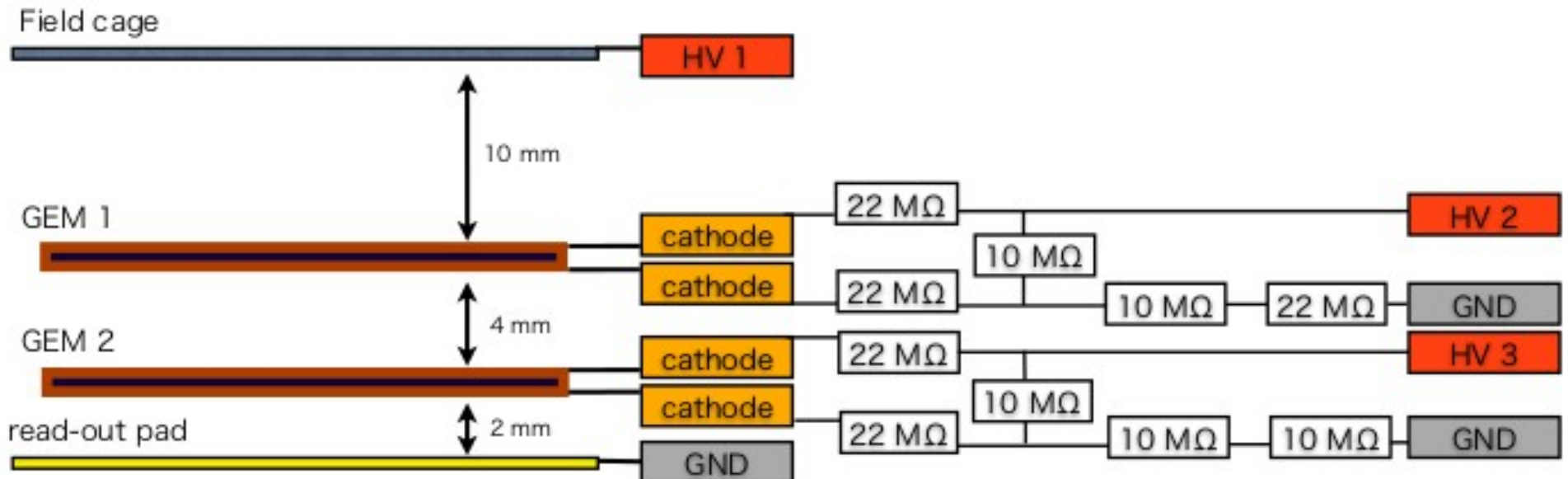
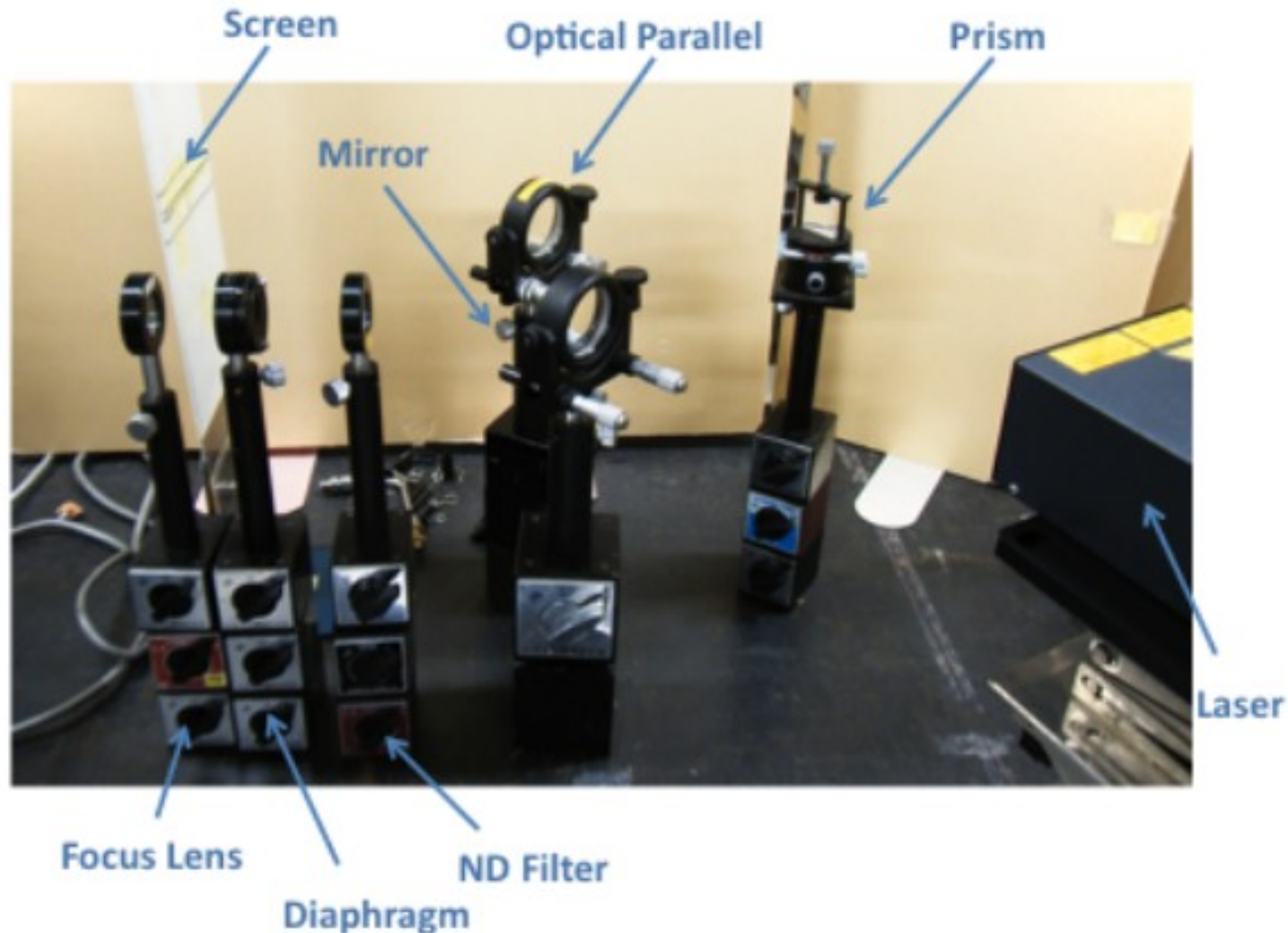


figure 9

Double GEM structure.
Drift region : 10 mm
Transfer region : 4 mm
Induction region : 2 mm



Laser test at TUAT



Nd-YAG laser (266nm)
Collimated to 1mm and focused to the center of the chamber

12/03/26

2 Module Test box in Saga
Philippe Gros, Saga University

10

Summary

- Test box for 2 modules is being build in Saga for various tests
- A laser test system will be included, but the configuration is not yet decided
- The laser is being used for tests in Tokyo, but no results to show yet...