GEMS status

Meeting presentation
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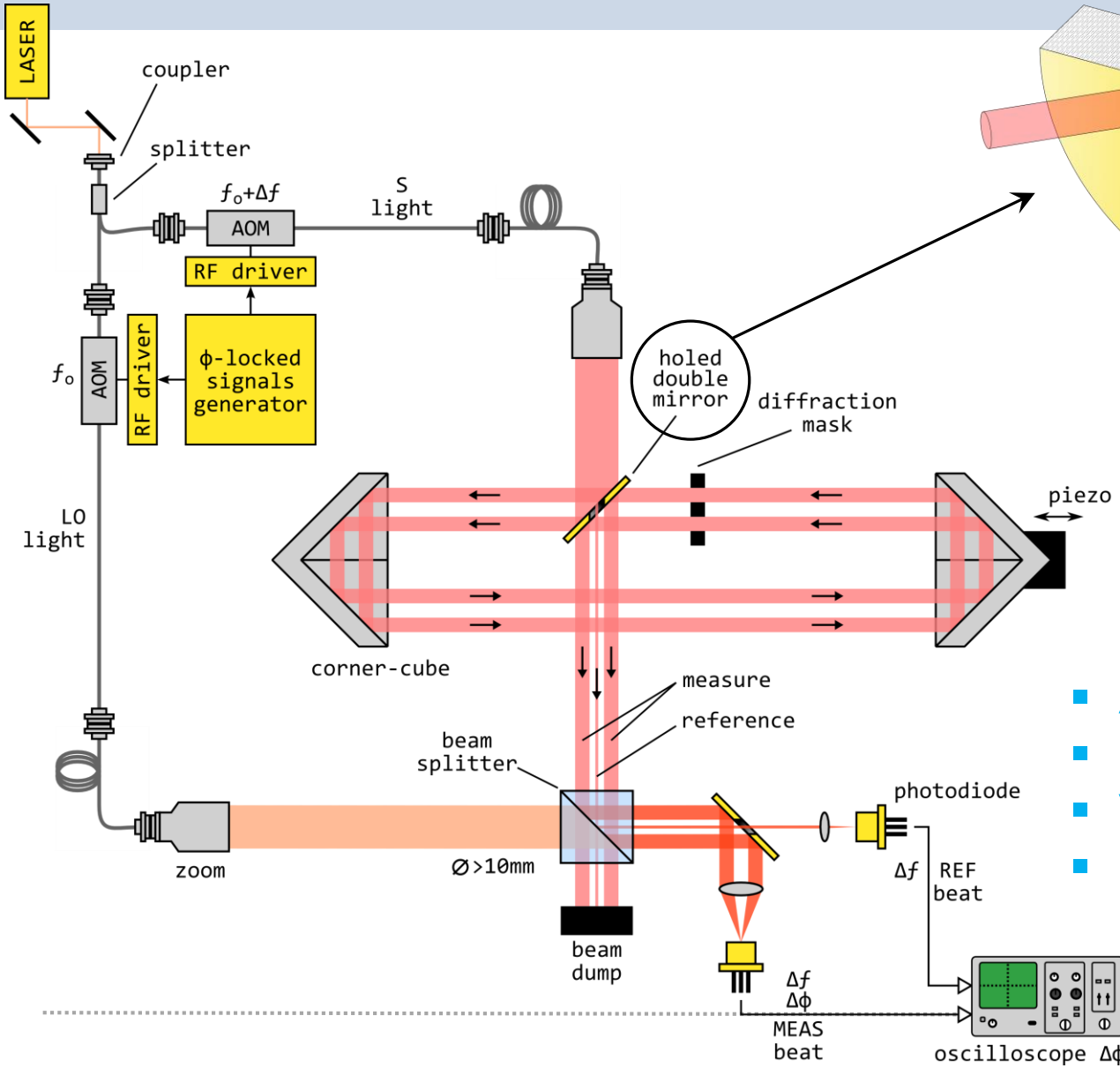
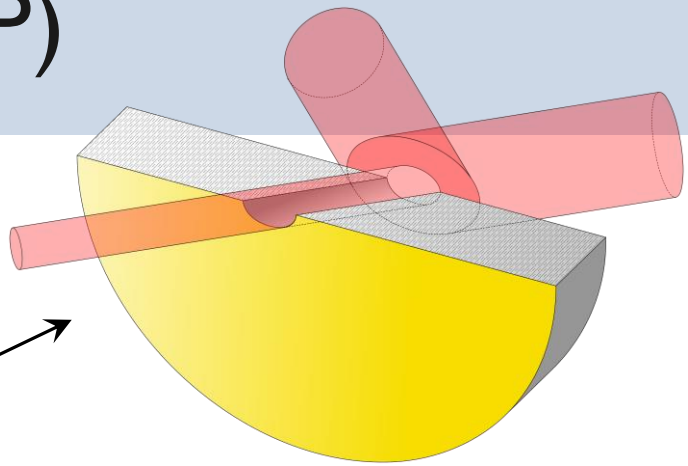
INFN
Istituto Nazionale di Fisica Nucleare

GINGER

GEMS Prototype (GEMS-P)



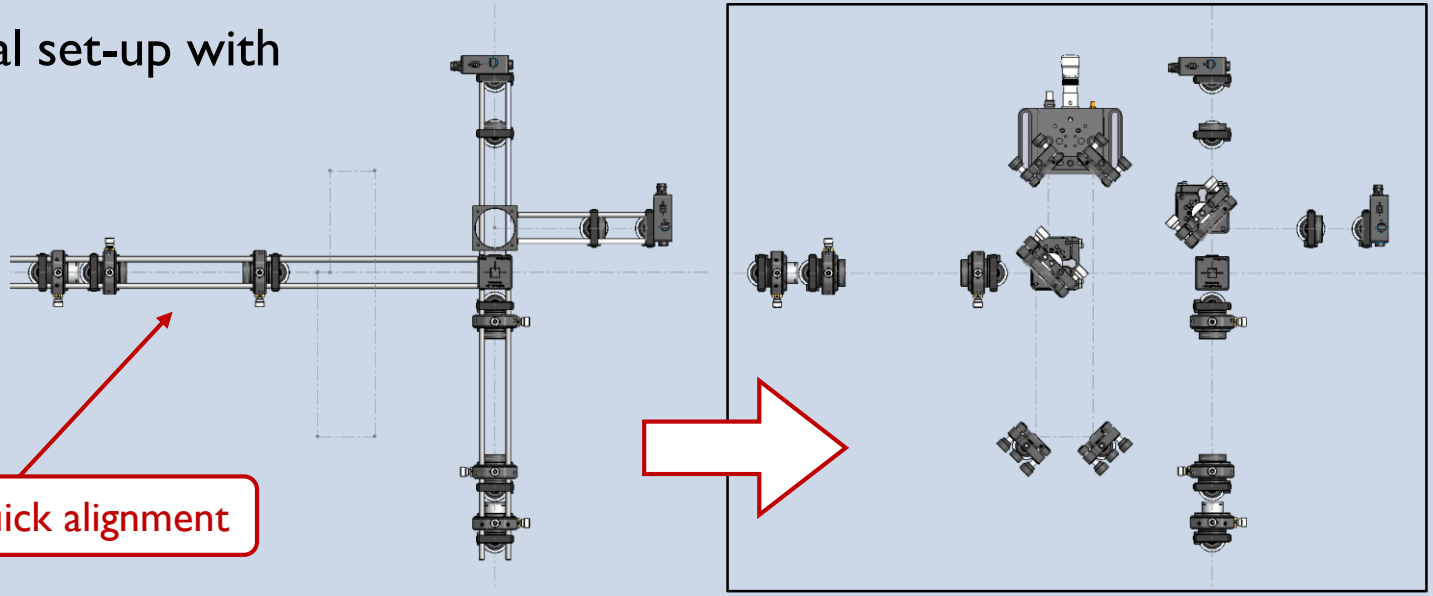


Goals: evaluate

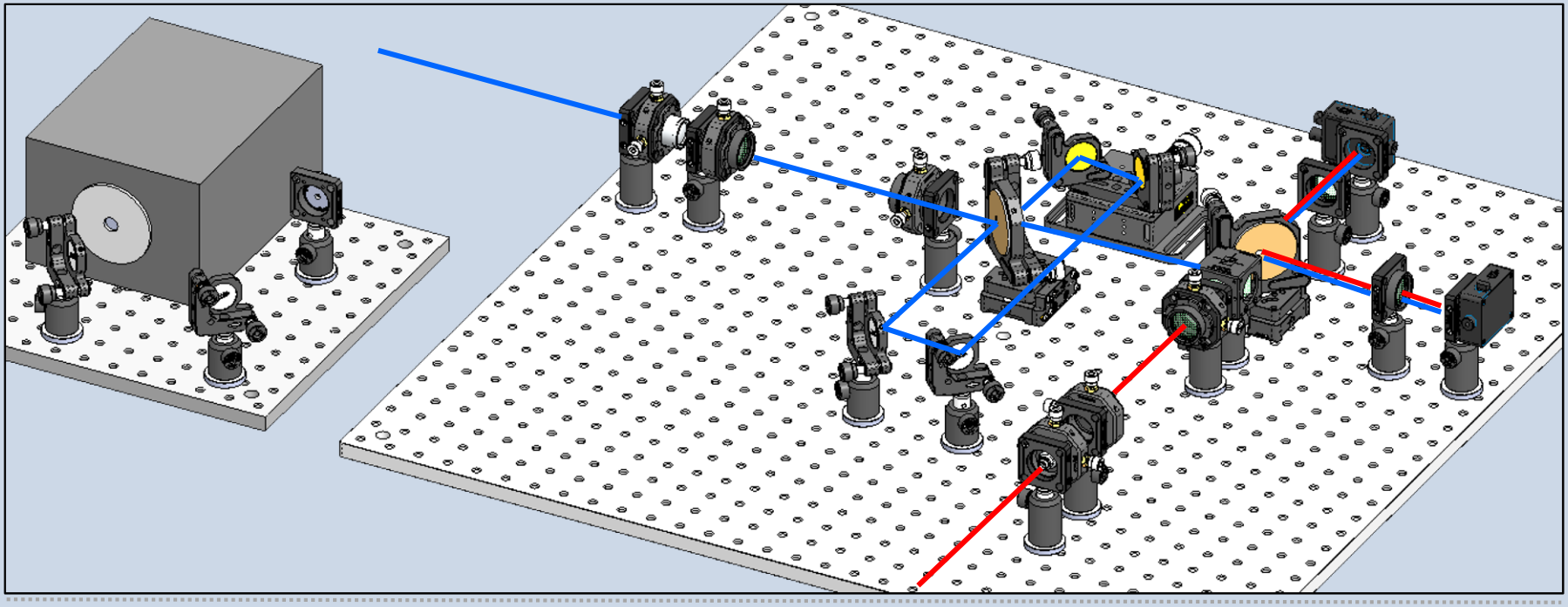
- parts behavior
- alignment issues
- individual vs overall performance

- All-fiber source (compact!)
- Holed double mirror
- Vibration isolated table
- In-air environment

- Full 3D virtual set-up with Solidworks



Cage System for quick alignment



What's already there

- New dedicated lab at CNR-IFN
- New off-the-shelf mounts and optics
- 1064nm Nd:YAG laser (1kHz linewidth!)
- Fiber coupling
- Detectors

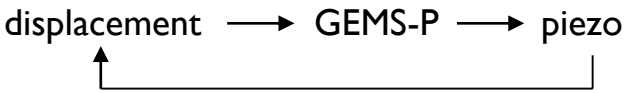
Coming soon:

- RF driver
- AOMs
- Holed mirrors

2nd year PLANNING

Acquisition & Actuation

- Digital data acquisition
- GEMS-P test and performance evaluation
- Implementation of a simple feedback loop for single distance stabilization:



- ❖ Digital phasemeter (FPGA?)
- ❖ PC
- ❖ Piezo-stage (3-axial)

Optical Upgrade

- Study of diffraction and its effects on long path beam propagation
- Beam shaping for compactness
- Mechanical stability evaluation
- Thermal stability evaluation

- ❖ Low-drift mounts
- ❖ NIR camera / Wavefront sensor ?
- ❖ Reflective fiber collimators
- ❖ Reference corner-cubes
- ❖ Optimized holed mirrors
- ❖ Diffraction masks