

# The Copernico Telescope testing facility for AO on-sky demonstrations

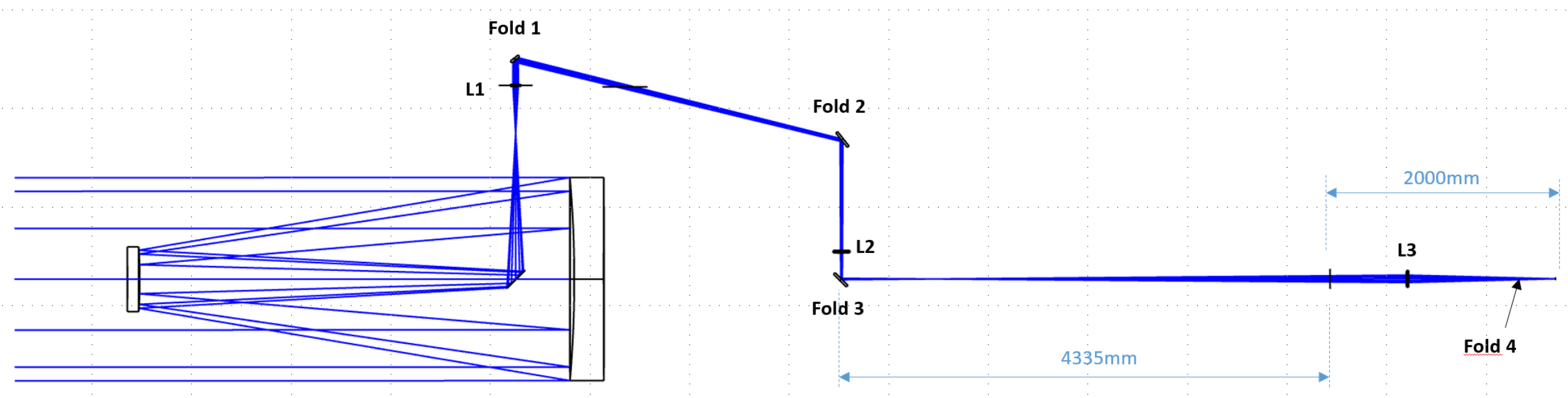
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## ABSTRACT

We present a new testing facility hosted at the Coudé focus of the INAF-Padova Copernico Telescope, a project carried on within the ADaptive Optics National Italian laboratories - ADONI. A permanent laboratory for on-sky experimentation accessible to the AO community, with the aim of hosting visiting multi-purpose instrumentation that may be directly tested on sky. We will give an overview of the activities carried on, describing the refurbishment activities at the hosting structure that allowed the opening of the facility: the implementation of the opto-mechanical train down to the Coudé focus, and the creation of the laboratory. This facility provides a powerful scientific and technical test bench for new instrumental concepts, which may eventually be incorporated later in the next generation ELTs telescopes.

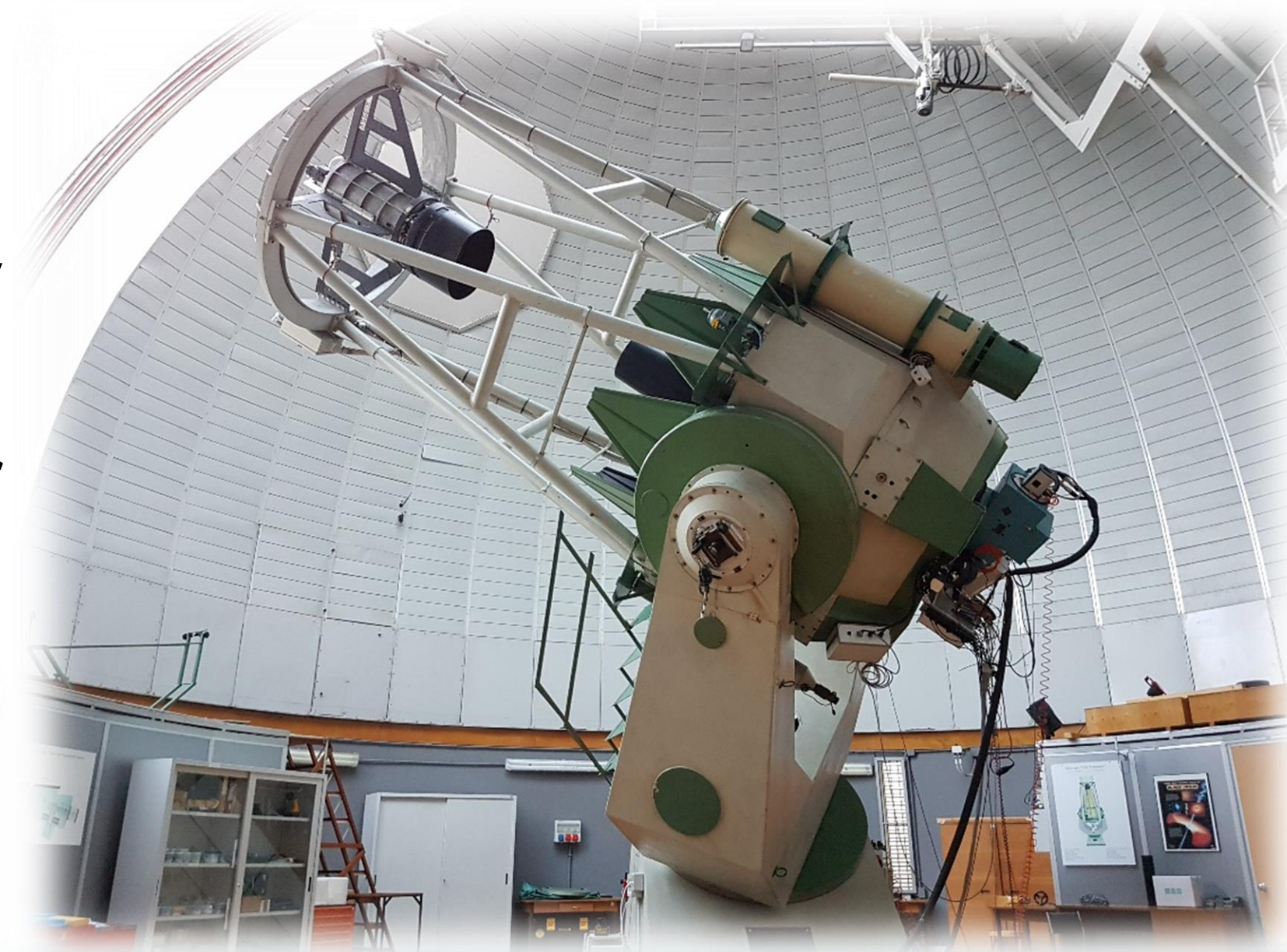
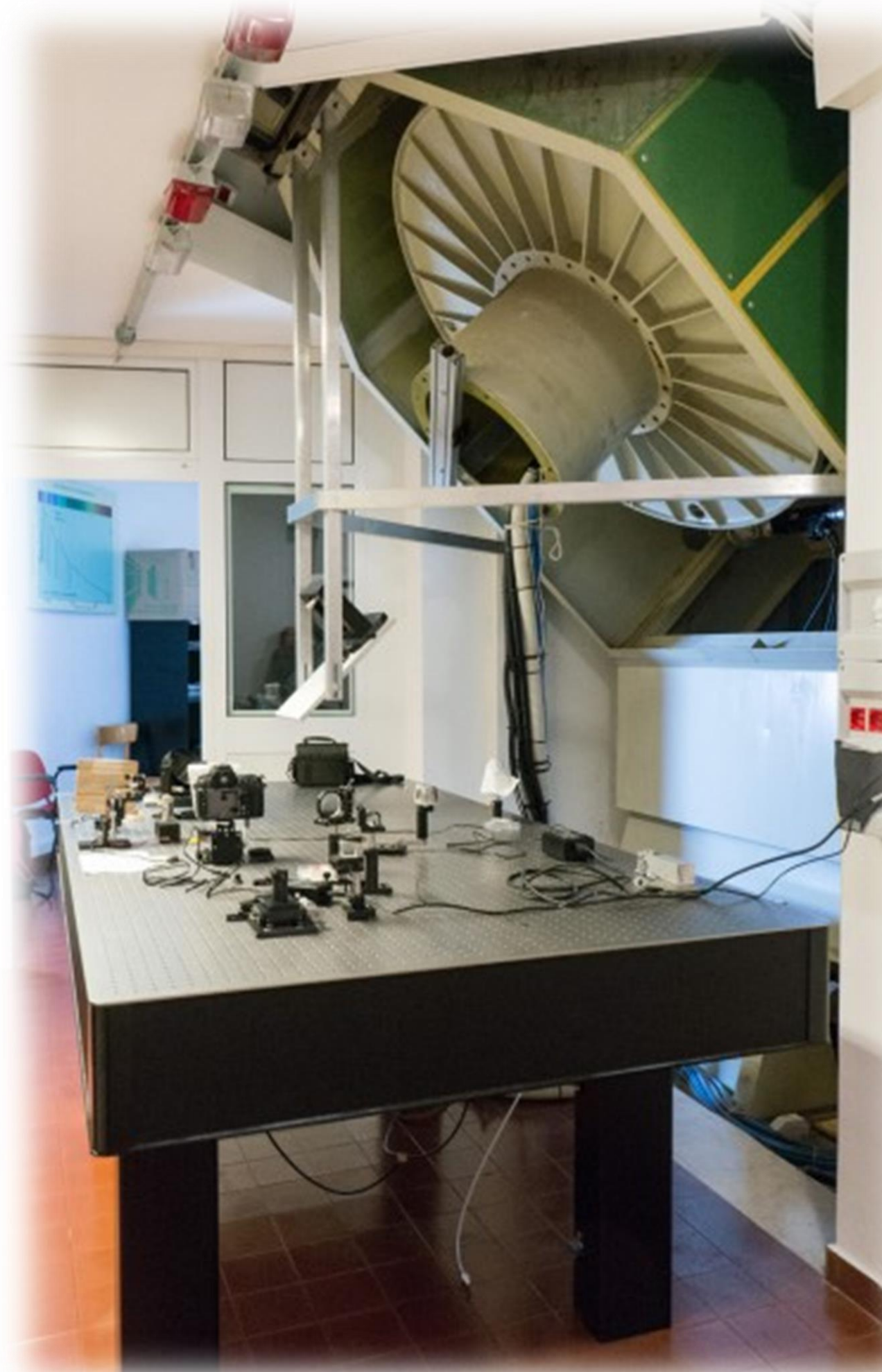
The **Adaptive Optics (AO) laboratory** is now accessible for visiting instrumentation allowing for direct on-sky testing by instrument teams using their own stand-alone instruments and providing a scientific or technical test bench for new instrumental concepts, which may eventually be incorporated later in other instruments. This facility is intended for the implementation of dedicated equipment so optical experimentation can be carried on for relatively short periods of time.

Refurbishment for the opening  
of the Coudé focus



### Optical Specifications

Telescope diameter	1820 mm
Coudé F/#	20
Plate scale	5.6 arcsec/mm
Unvignetted FoV	2.4 arcmin
Flight height	150 mm
Maximum non-telecentricity angle	2 arcmin
Focal extraction (from BS)	-290 mm



At the Coudé focus of the Copernico Telescope in Asiago, Italy

A permanent facility  
accessible to AO  
community for ON-SKY  
experimentations

Testing at the AO facility

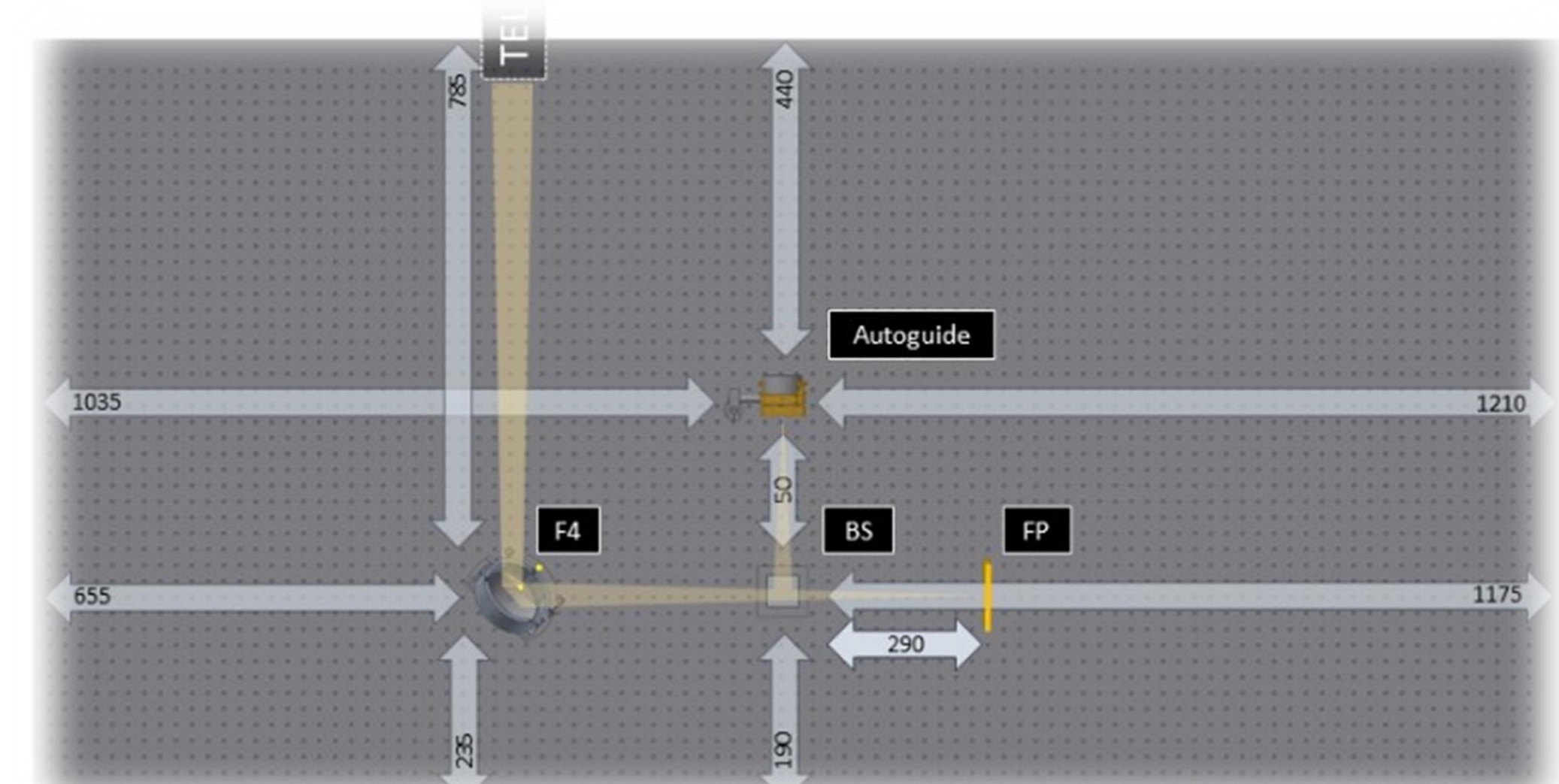
The laboratory at the **Coudé Room** of the Copernico Telescope in Asiago is enclosed in a light tight room measuring approximately 20m<sup>2</sup>. The room can be darkened as needed with dimming lights and is thermally insulated, so optics are kept under stable temperature control. An optical bench of dimensions 2400x1200mm is present, on which users can set up their own instruments.

### Adaptive Optics facility

- **TELECENTRIC**
- **FoV 2.4 arcmin**
- **F/# 20**
- **Scale 5.6 arcsec/mm**

### Equipped with

- Auto-guiding camera
- Derotator
- Light-tight cover
- Filter wheel



### Sketch of the workbench set-up.

The approximated available space on the workbench for the host instrumentation is shown, taking into account all the mounting components, dimensions are expressed in mm. The Coudé focal plane (FP) is at a distance from F4 of 710mm, with a focal extraction from the last surface of beam splitter (BS) of ~290mm. Precise focusing can also be done, if necessary, by moving the secondary mirror.