



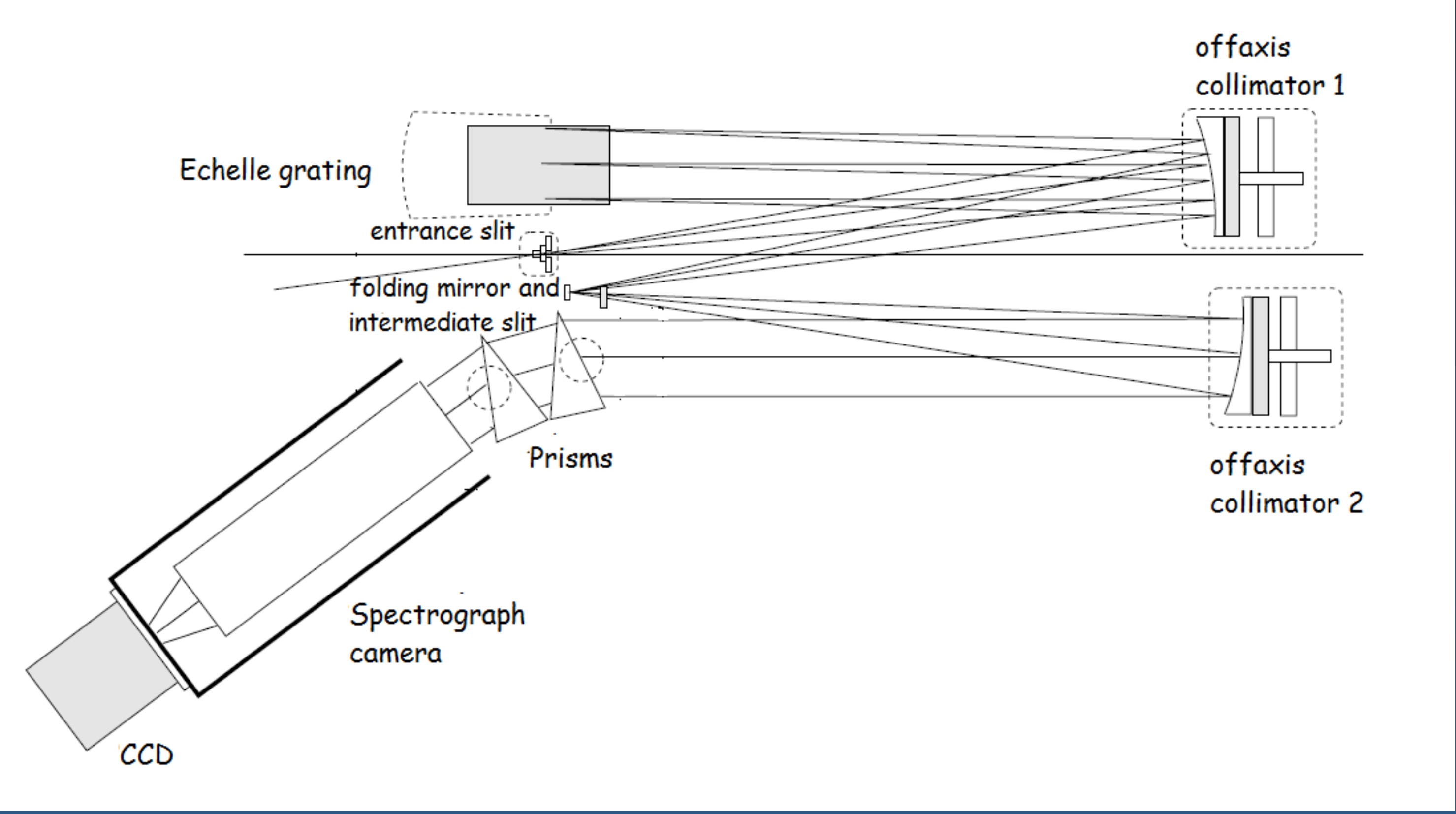
CAFE. Calar Alto Fiber Fed Spectrograph. Progress report (2008-2010)

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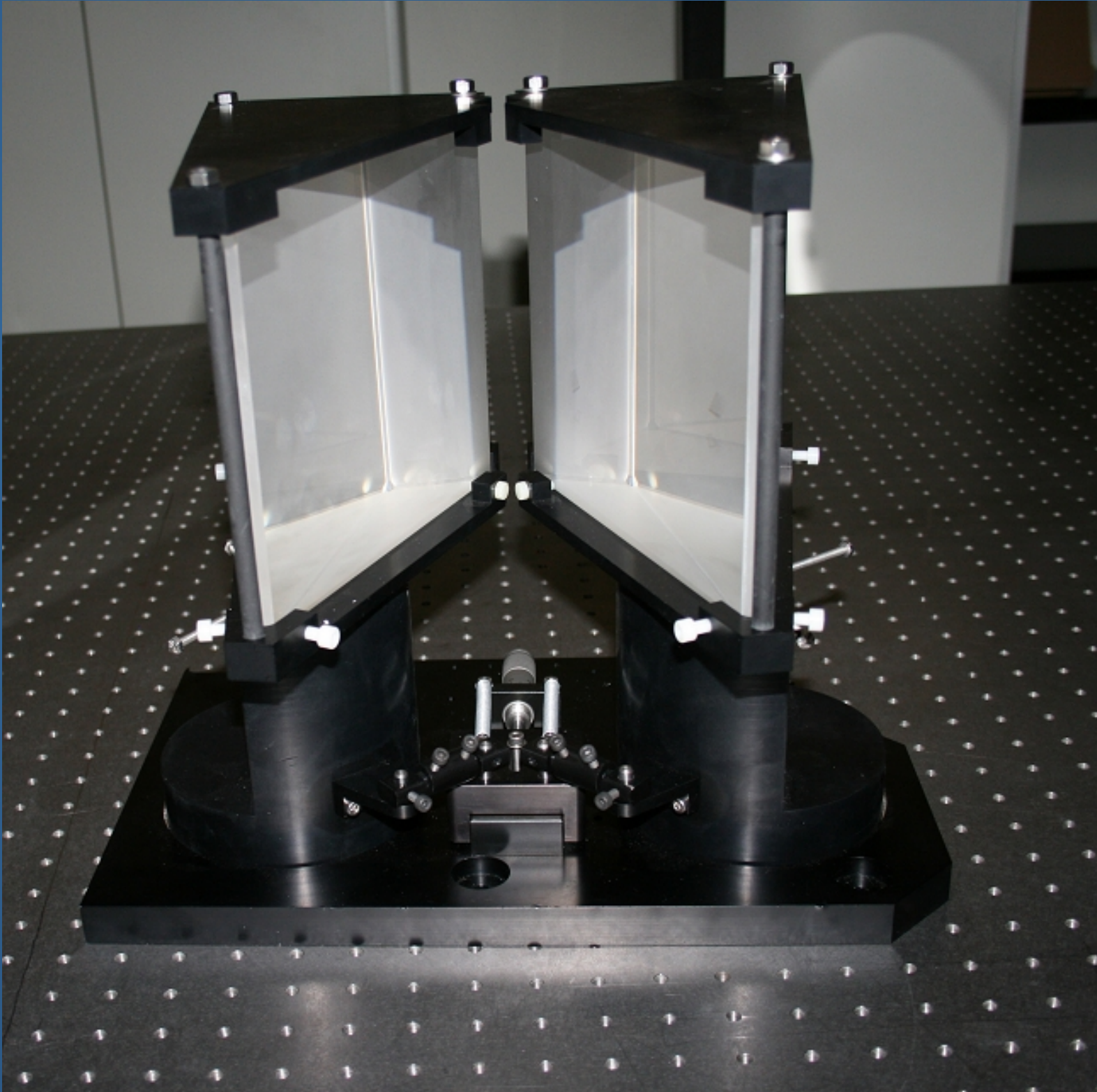
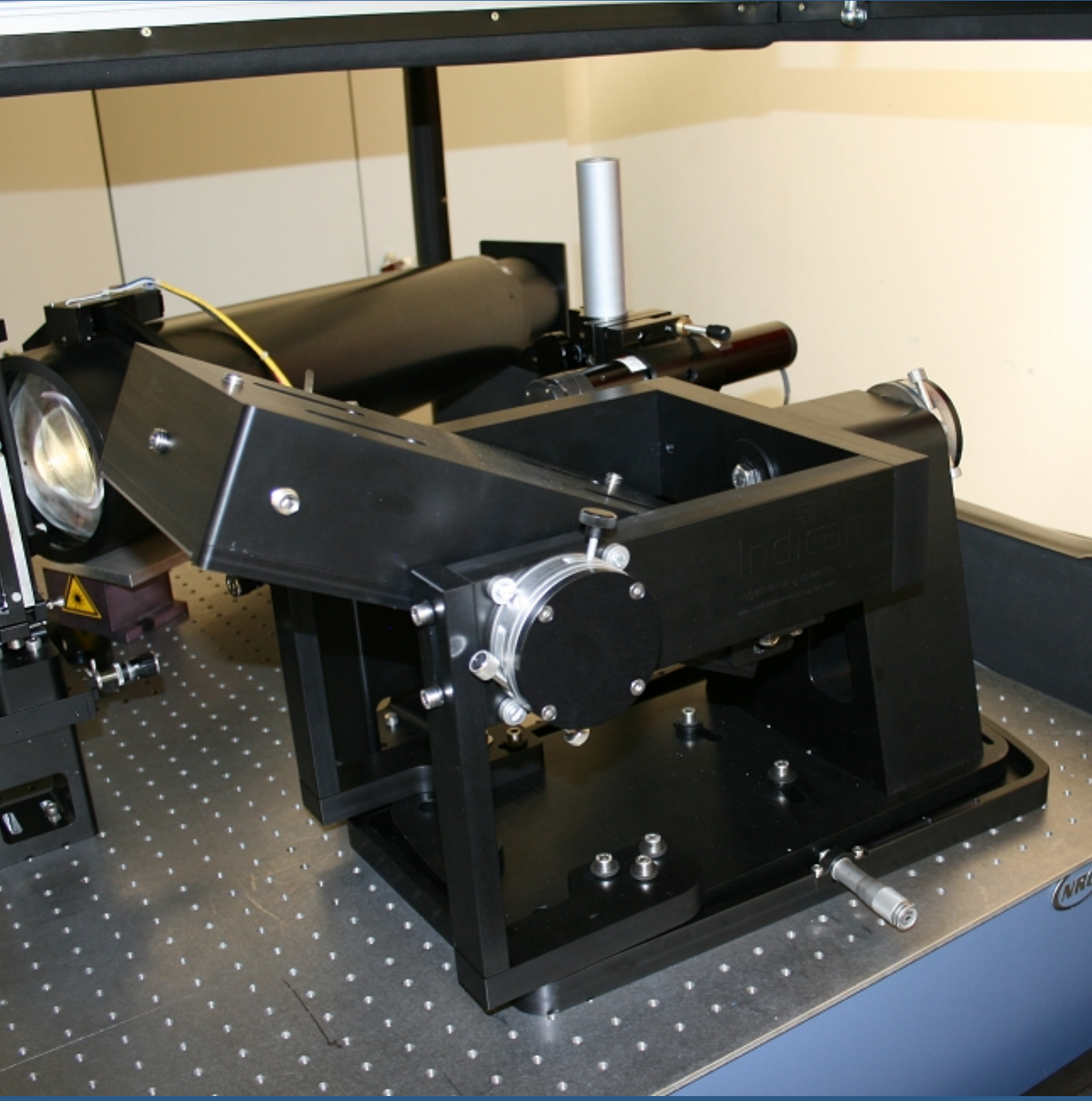
The Calar Alto Fiber-fed Echelle spectrograph is an instrument under construction to replace FOCES, the high-resolution echelle spectrograph at the 2.2m Telescope of the Calar Alto observatory. FOCES is a property of the Munich University Observatory, and it was removed from Calar Alto in 2010. The instrument comprised a substantial fraction of the telescope time, and due to that, it was decided to build an improved replacement, called CAFE.

FOCES	CAFE
Echelle spectrograph design Calar Alto 2.2m (1997-2009) R=46000/64000 on 24/15µm CCD	Echelle spectrograph design Calar Alto 2.2m (2010...) R=70000 on 13.5µm CCD
Wavelength range: Visible	Wavelength range: Visible
L-N2 cooled	Peltier cooled
Un-stabilized	P,T stabilized
Moving parts (slit, grating, prisms..)	No moving parts
Th-Ar lamps	Iodine-cell, detection of exoplanets
Optical quality of elements λ/10	Optical quality of elements λ/20
S/N=100 for 10 h mag G-star: 1h	S/N=100 for 10 h mag G-star: 1h

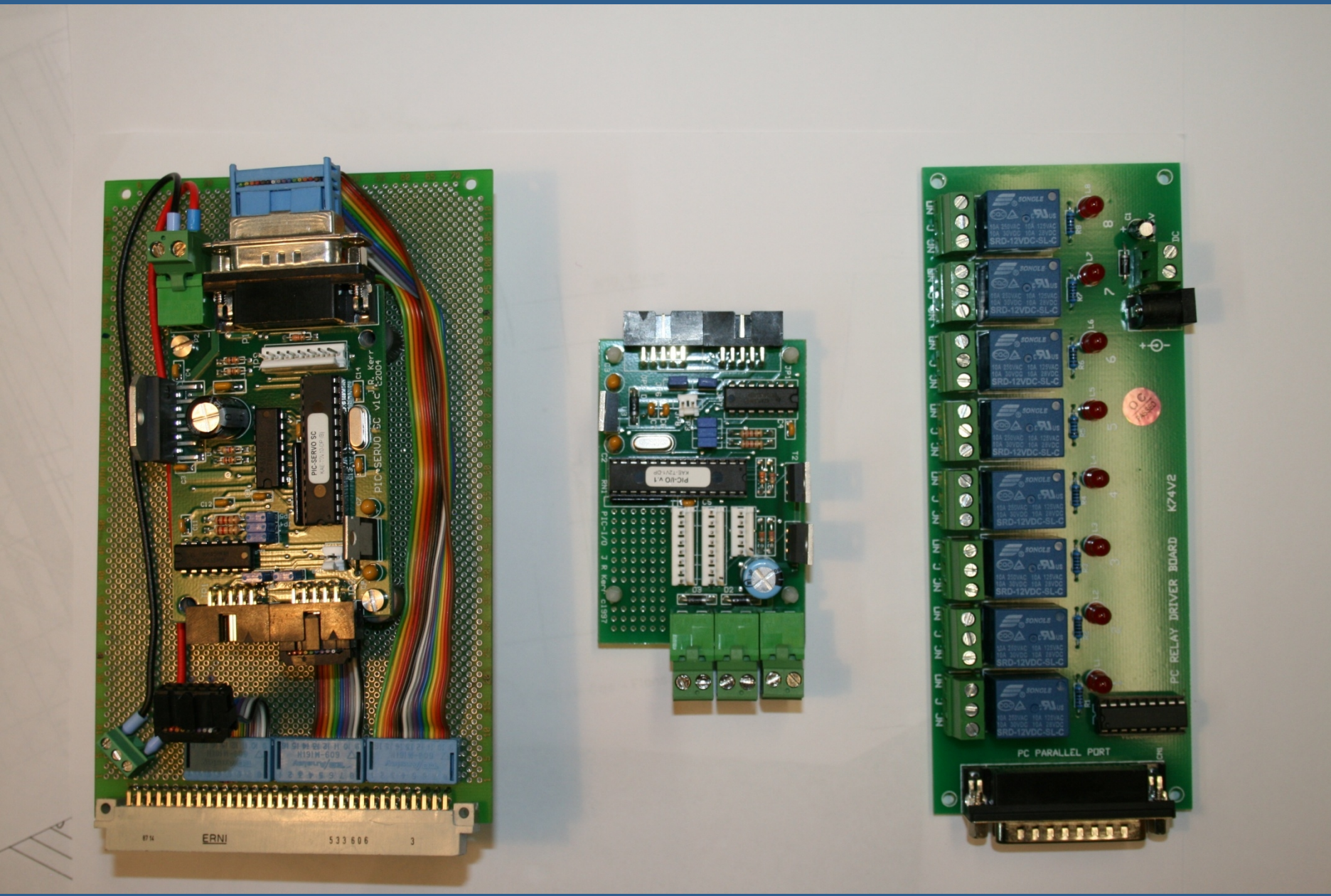
Comparison table of the main features of FOCES and CAFE.



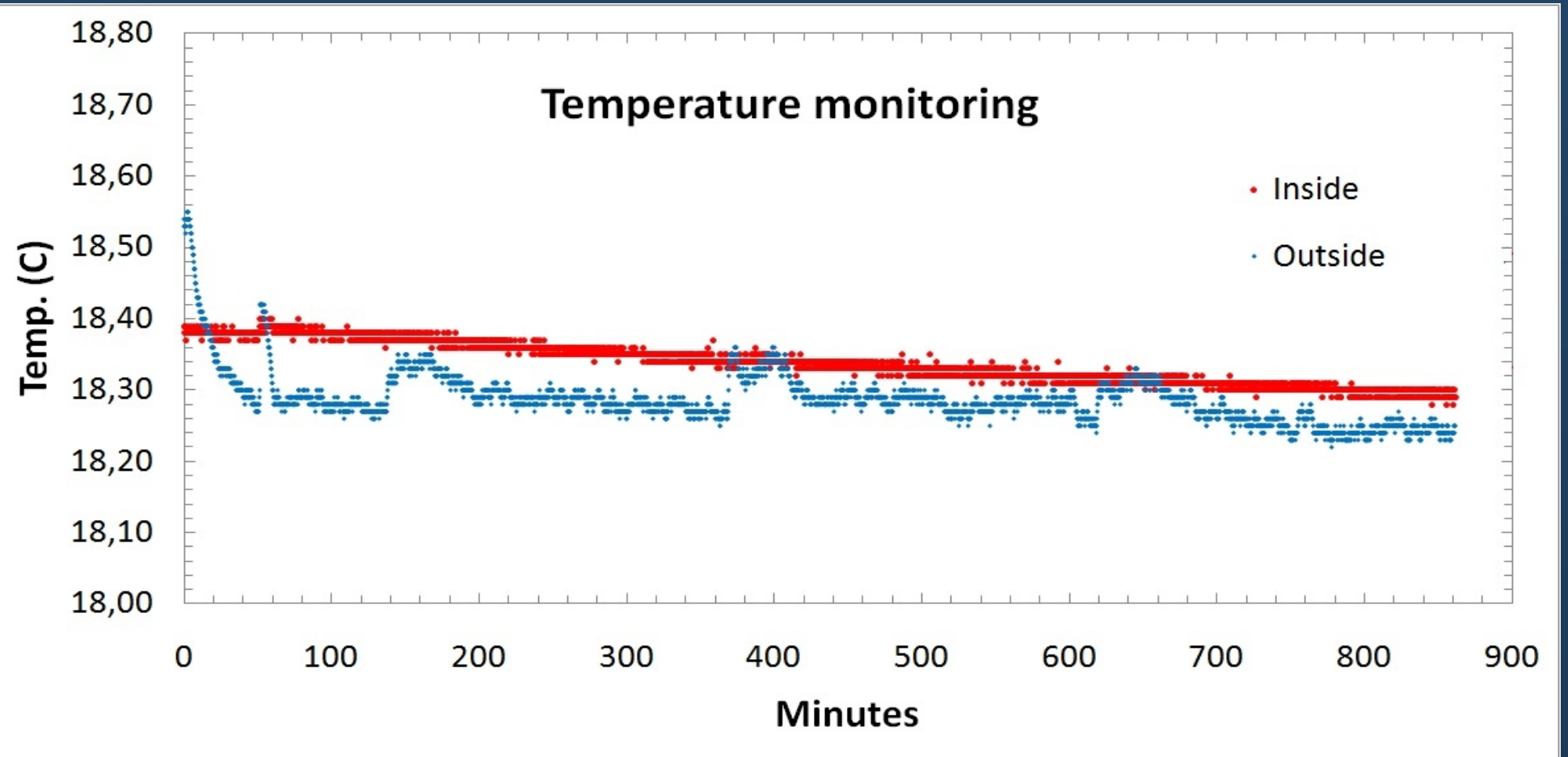
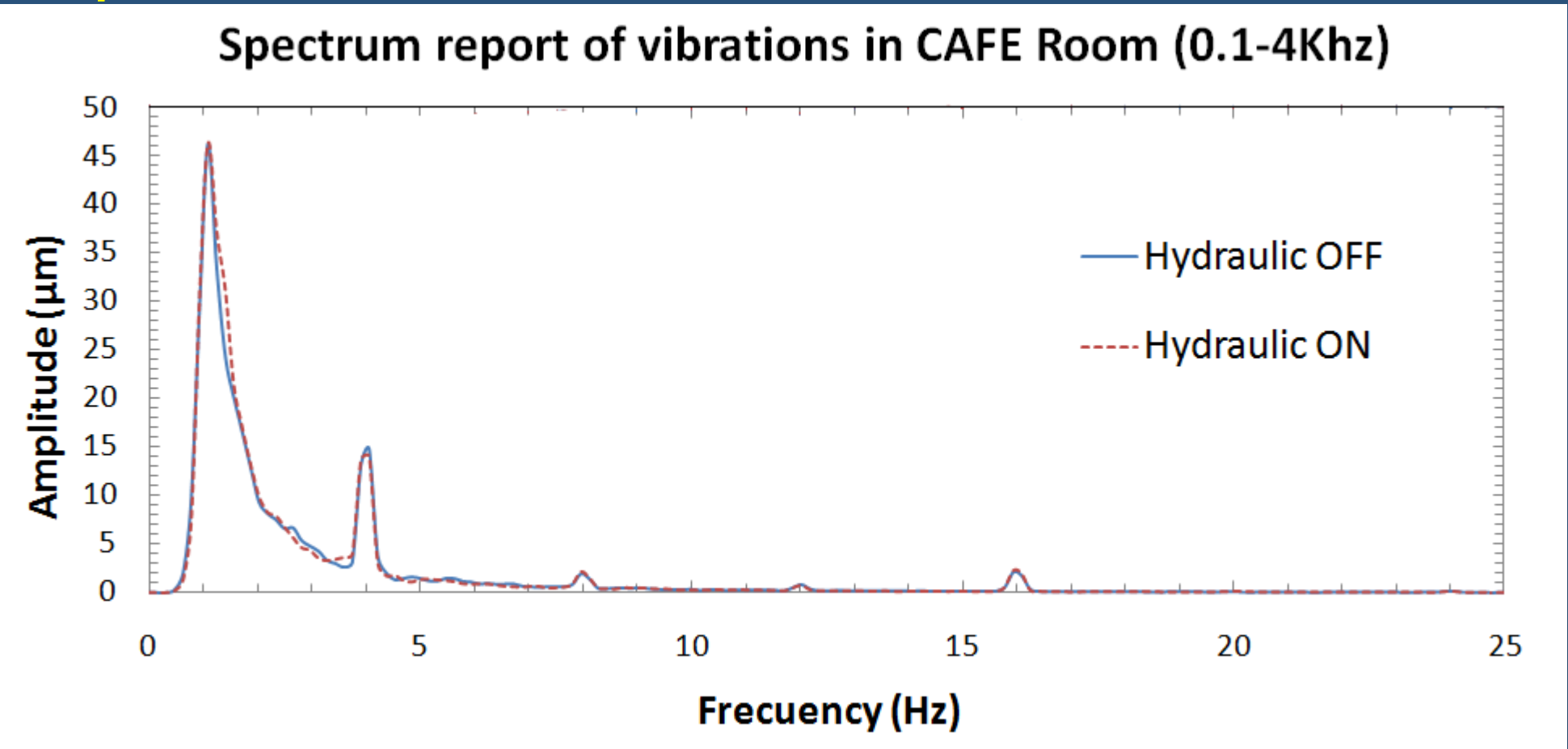
The optical design of the instrument is quite similar to FOCES. It has been optimized, expecting to increase the efficiency of the instrument in at least a 10%.



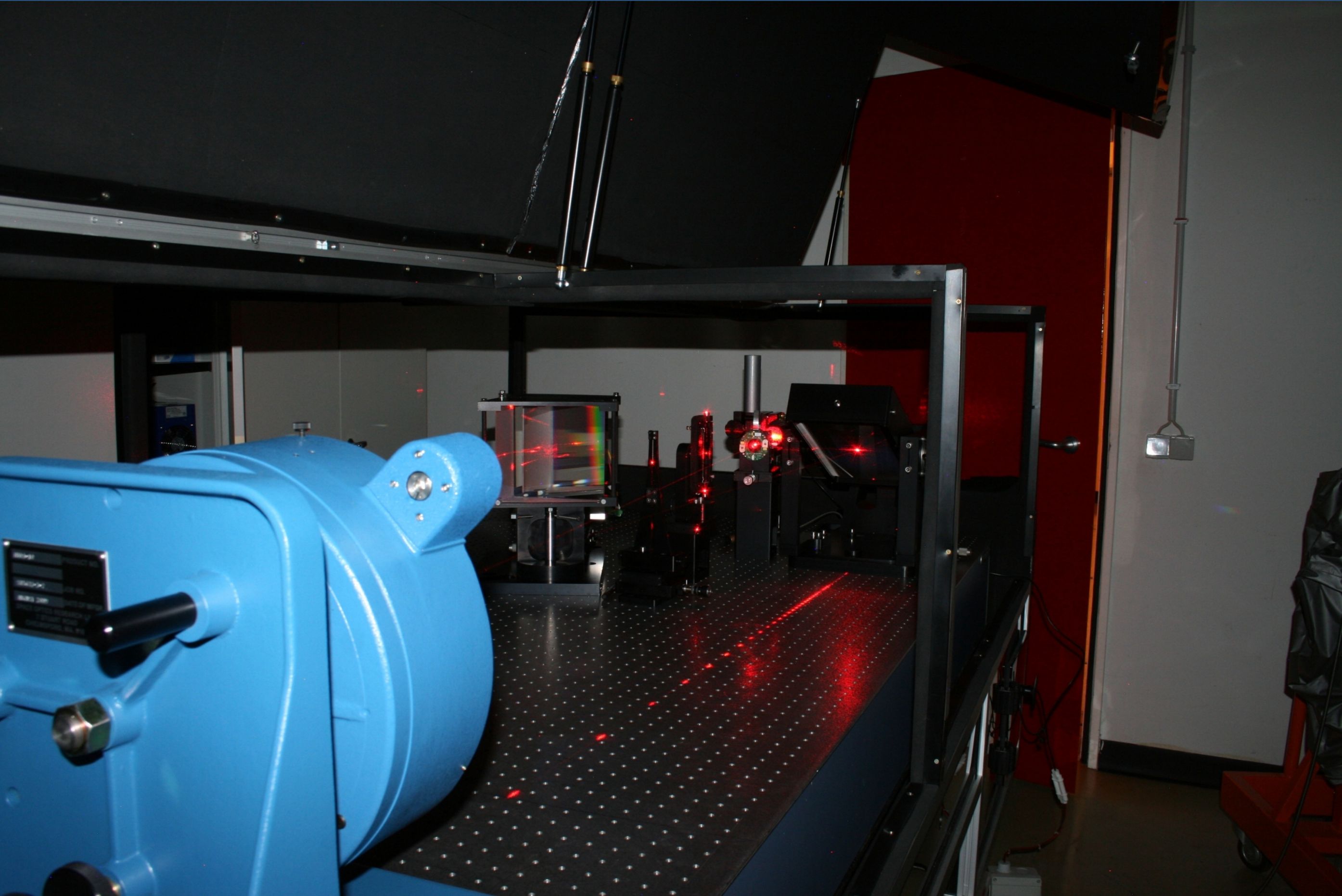
Based on the knowledgement acquired with FOCES, some precision optical mounts have been re-designed to improve the stability of the system. Once a final alignment is achieved, there will not be any linear actuators or movable parts that could modify the setup due to thermal expansions.



CAFE will use the old FOCES telescope module, which solves the problem of the connection to the telescope focal plane. A new electronics has been developed based on standard and modular pic controllers.



CAFE is installed in a temperature and vibration control room, with a much sophisticated pneumatic stabilization system. There is no vibrations effects from the telescope's hydraulic s. The temperature variations are smaller than 0.06C in a lapse of 15 hours, This will improve the performance and accuracy for velocity measurements of fainter objects. A more detail study is in progress.



The instrument is almost assembled. All the important elements are placed on the optical bench and the fine optical alignment is in progress.

Commisioning at the telescope expected for the end of 2010!