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Motivation:

PLATOSpec project is designed as ground-based support spectrograph of PLATO space mission. The instrument will start operations at E1.52-m telescope at La Silla, Chile in November 2024. PLATOSpec will have spectral resolving power of 70k and it will be efficient in blue wavelength range to characterise stellar variability. However, as the telescope was upgraded in 2022, we installed an interim spectrograph PUCHEROS+ which is currently operational. PUCHEROS+ is an echelle spectrograph with R=18000, covering a wavelength range of 400-700 nm. The instrument was used for the testing and later since April 2023 for scientific observations of active stars and of first screening of TESS candidates and similar programs. Here, first results from PUCHEROS+ are presented. We will present also further plans for reaching better precision to support also validation process of smaller planets.

The PLATOSpec consortium:

Astronomical Institute of the Czech Academy of Sciences, CZ – PI institute (contact: petr.kabath@asu.cas.cz); Universidad Católica de Chile, CL – major partner; Thüringer Landessternwarte Tautenburg, DE – major partner; Masaryk University, CZ – minor partner; Universidad Adolfo Ibáñez, CL – minor partner; Institute of plasma physics of the Czech Academy of Sciences, CZ – minor partner

The location and the telescope E152

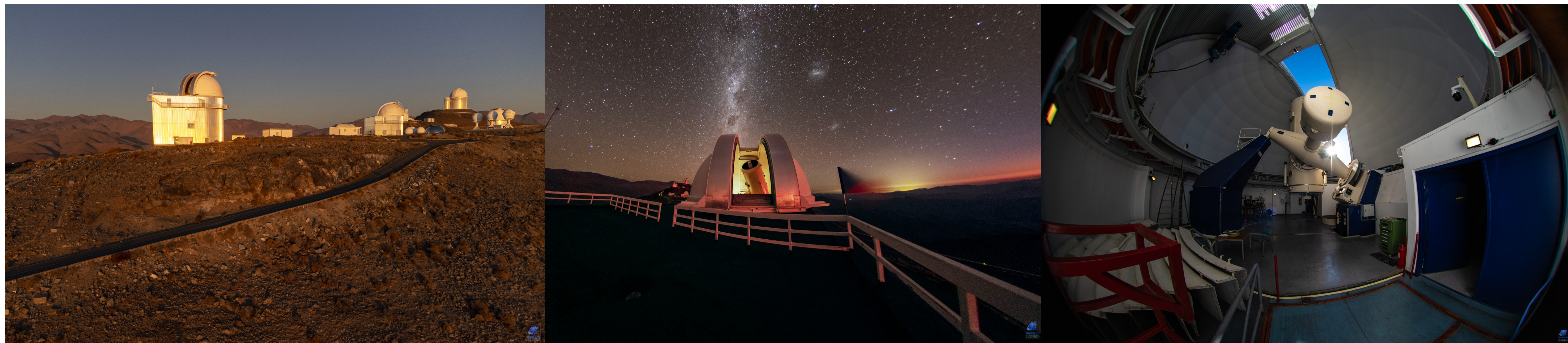


Figure 1: The telescope E152 was one of the first telescopes at La Silla, ESO in Chile (July 1968). It was decommissioned in 2002. On 03 April 2022, 20 years after its decommissioning, it is back. The E152 telescope is a twin telescope of 1.92-m at OHP, built also by REOSC, which discovered the 51 Peg b. New control systems were implemented by the ProjectSoft company. Currently, the test mode is in place. The interim spectrograph PUCHEROS+ is now operational. The PLATOSpec instrument will arrive November 2024. Photos taken by Zdeněk Bardon.

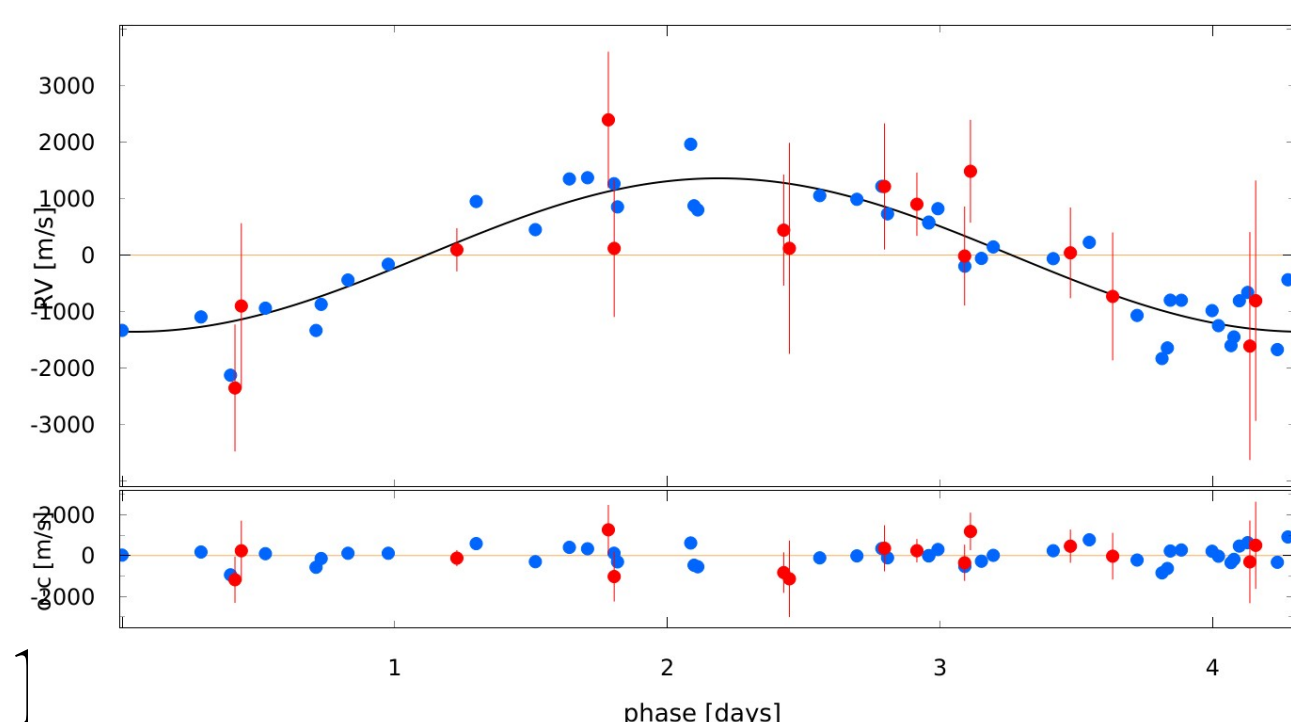
PUCHEROS+:

An interim instrument arriving September 2022. Regular scientific operations started in 2023 after recoating of the primary mirror. The spectrograph will be available until the arrival of the PLATOSpec expected 2024. The design is based on Vanzí et al. 2012.

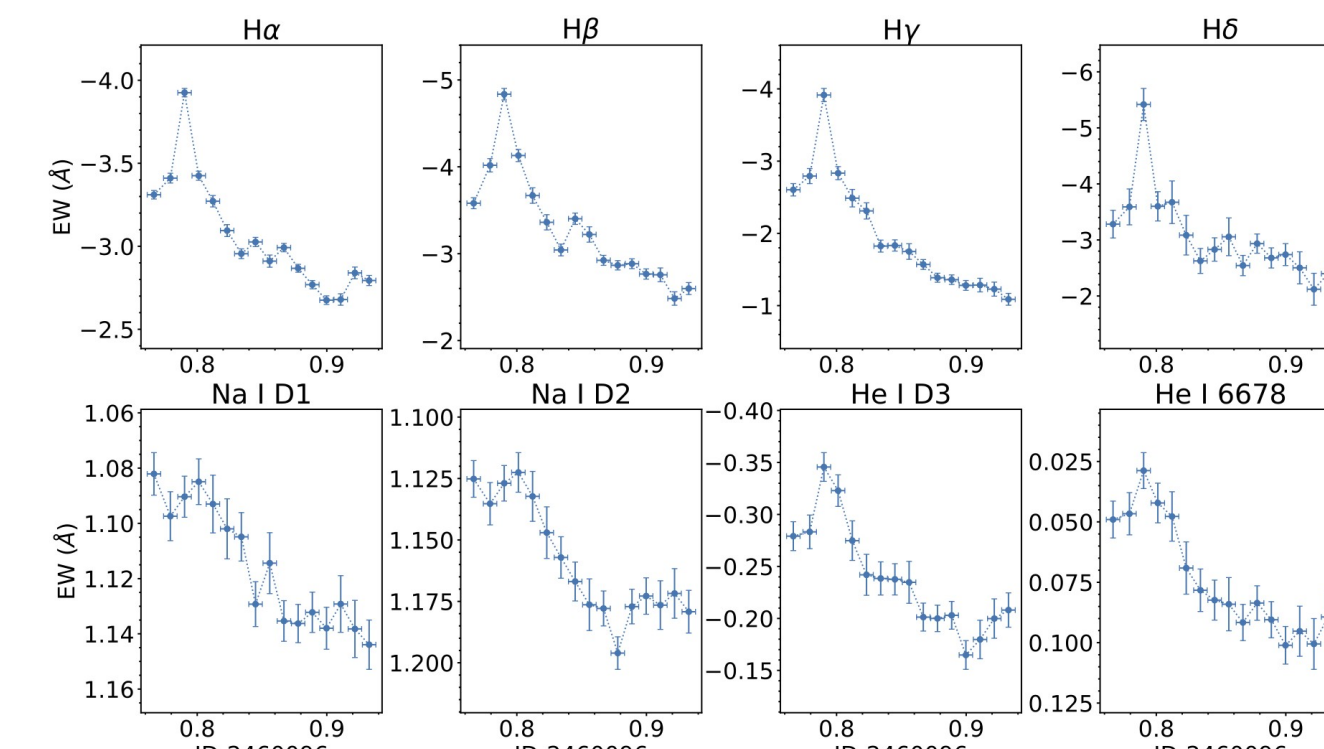
PUCHEROS+ is an Echelle spectrograph with R=18000 and wavelength coverage of 400-700nm. RV precision is about about 20 m/s on bright targets. The stability of RVs over a few months on star of V=7 mag is about 100 m/s.

PUCHEROS+ first results:

TESS Brown dwarf
Characterisation paper
Šubjak et al. 2024 A&A
Accepted. Figure: Red pts.
Pucheros+ RVs, blue TRES.
<https://arxiv.org/abs/2403.123>



Flaring star AU mic – obs. run (160 hrs)
Long term monitoring of stellar activity.
Paper by Odert et al. 2024,
A&A, submitted



Core observing programmes

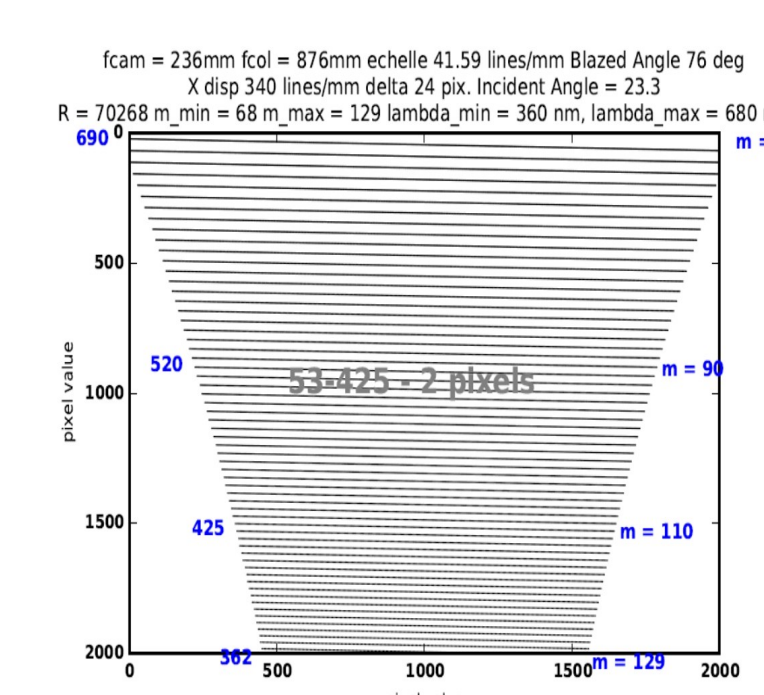
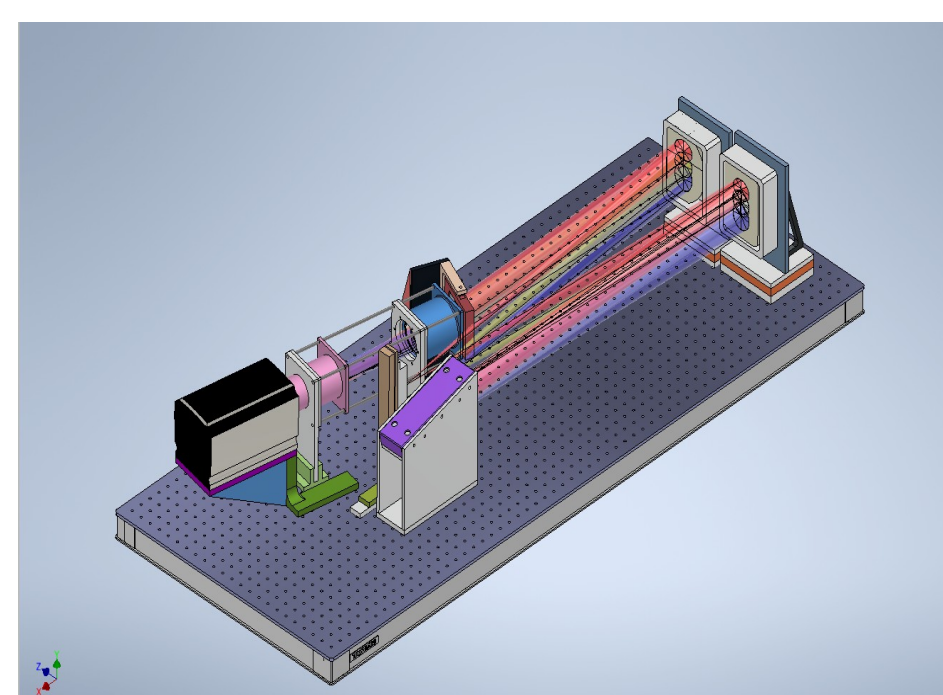
(PUCHEROS+/PLATOSpec):

- 1) Support of TESS and PLATO space missions
 - Follow-up of planetary candidates, initial screening
 - Determination of masses and radii
- 2) Characterization of Hot Jupiters
- 3) Long term monitoring programs
- 4) Asteroseismology, stellar variability
- 5) Other science – limited open calls for proposals

Data feed to ESO archive. The proprietary period is 12 months.

PLATOSpec (November 2024):

Wavelength coverage	360-680 nm
Spectral resolution	70k
Thermal stability	0.1deg
RV accuracy	3m/s
Calibration	ThAr+Iodine cell



PLATOSpec timeline:

- 1) Lab testing – June 2024
- 2) Installation La Silla, Oct. 2024
- 3) Commissioning Nov 2024
- 4) Regular operations end 2024

Figure 2: A drawing of the PLATOSpec instrument and an echellogram by L. Vanzí.

References:

Kabath et al., 2019PASP..131h5001K
Vanzí et al., 2012MNRAS.424.2770V
PLATOSpec WEB: <http://stelweb.asu.cas.cz/plato>

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