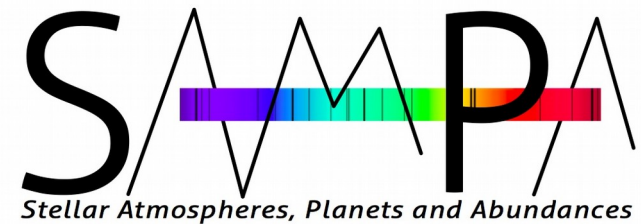


A new telescope for the Observatório Pico dos Dias



@DrJorgeMelendez

Departamento de Astronomia, IAG/USP



1.6m: the largest telescope

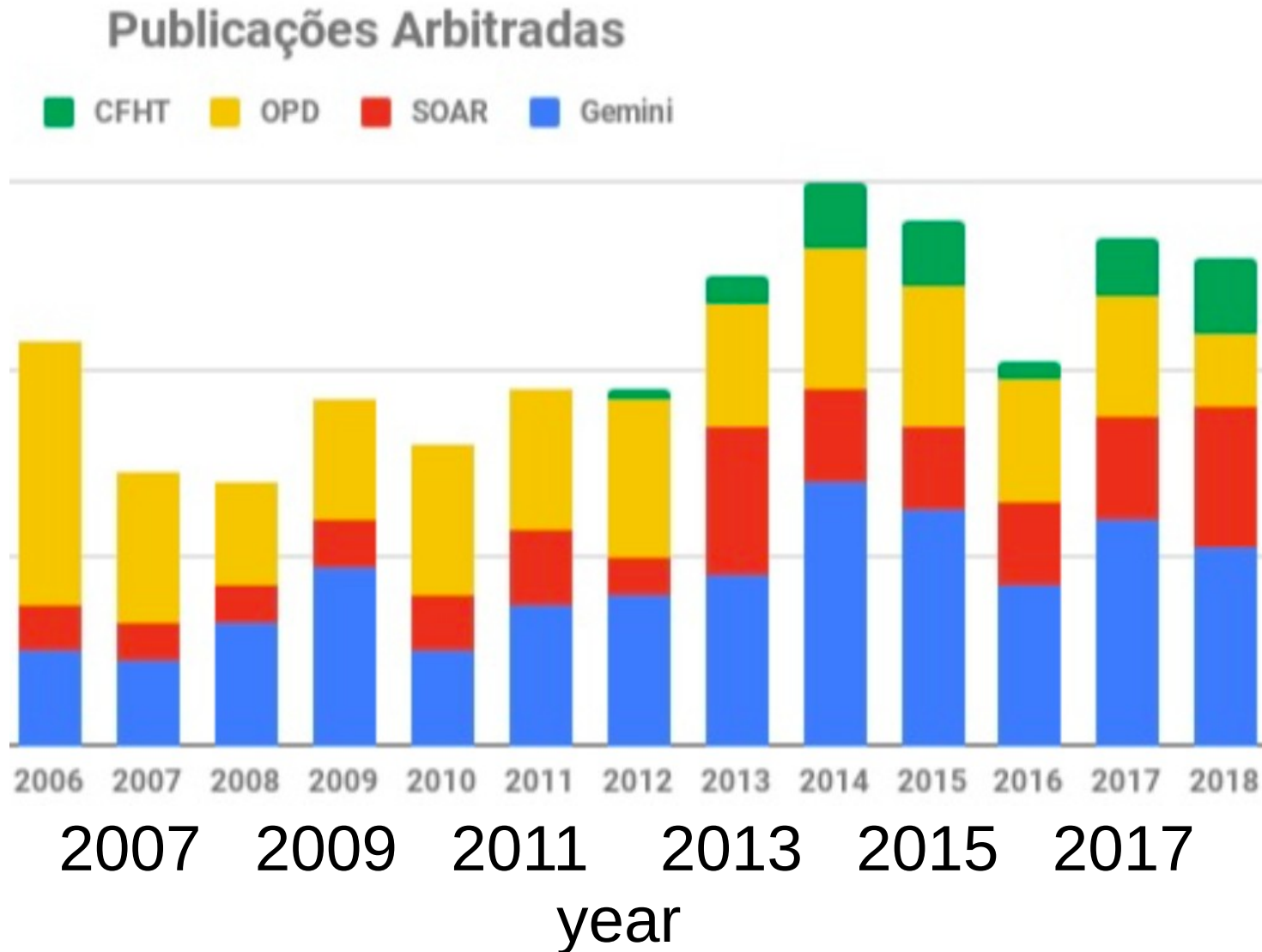


IAG (60cm): second largest Brazilian telescope at OPD [russo 75cm]



Refereed publications at OPD

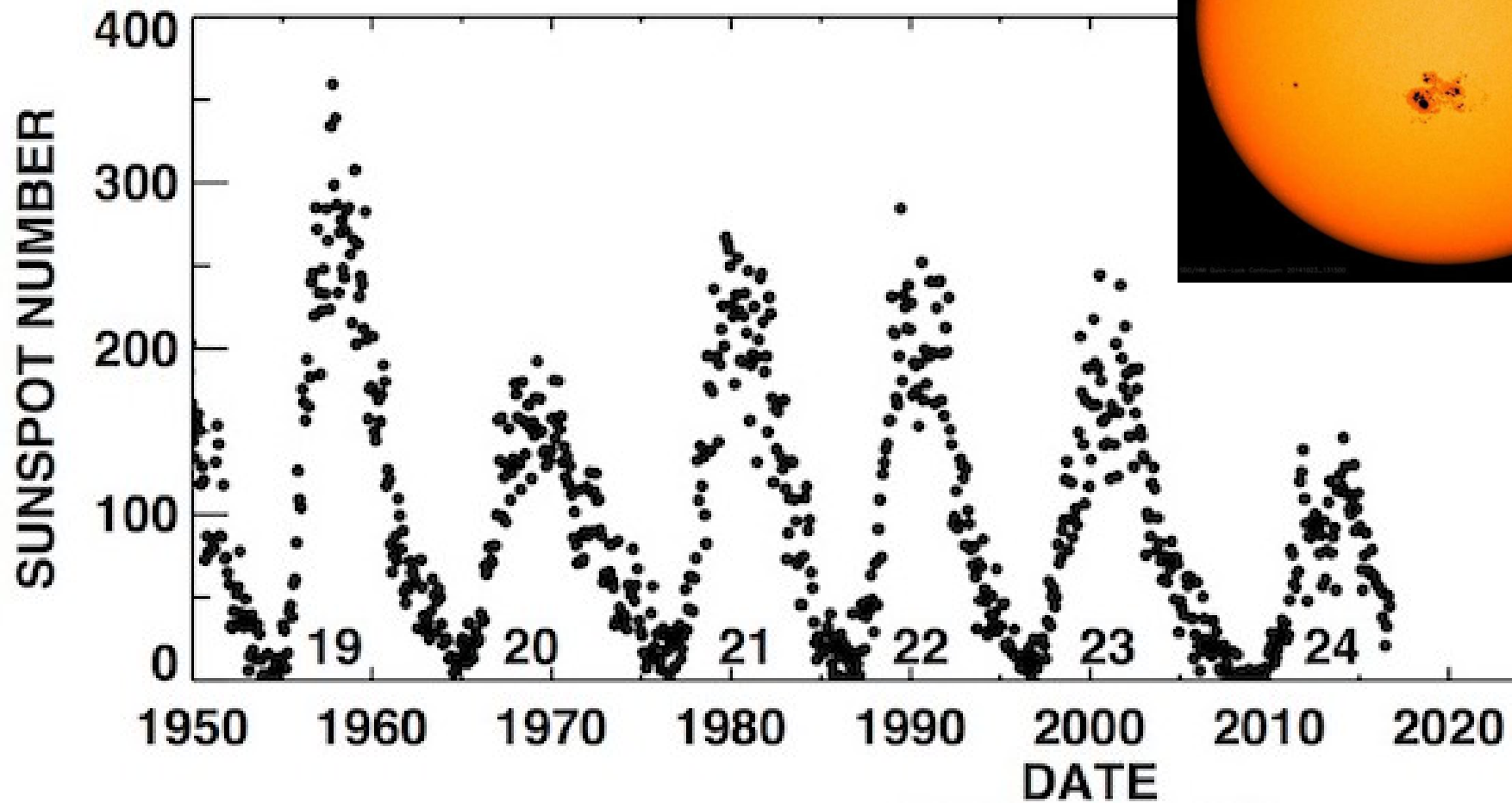
OPD is still very productive



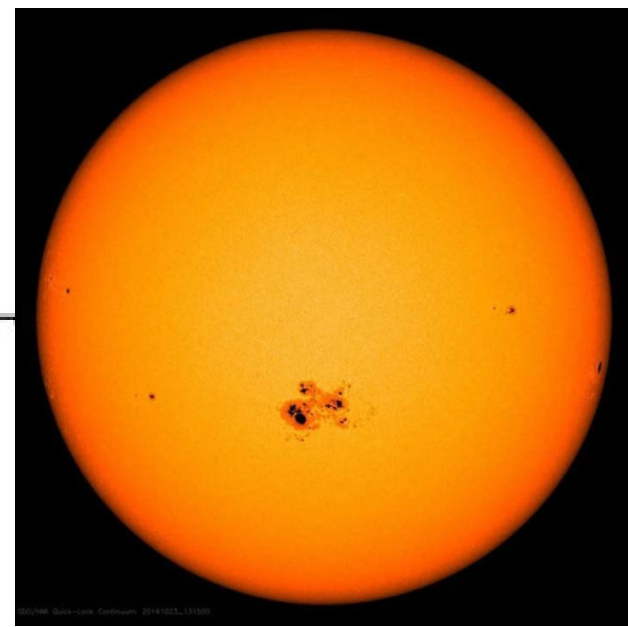
What is better? A plane or a car?



Sunspot cycle ~11 years

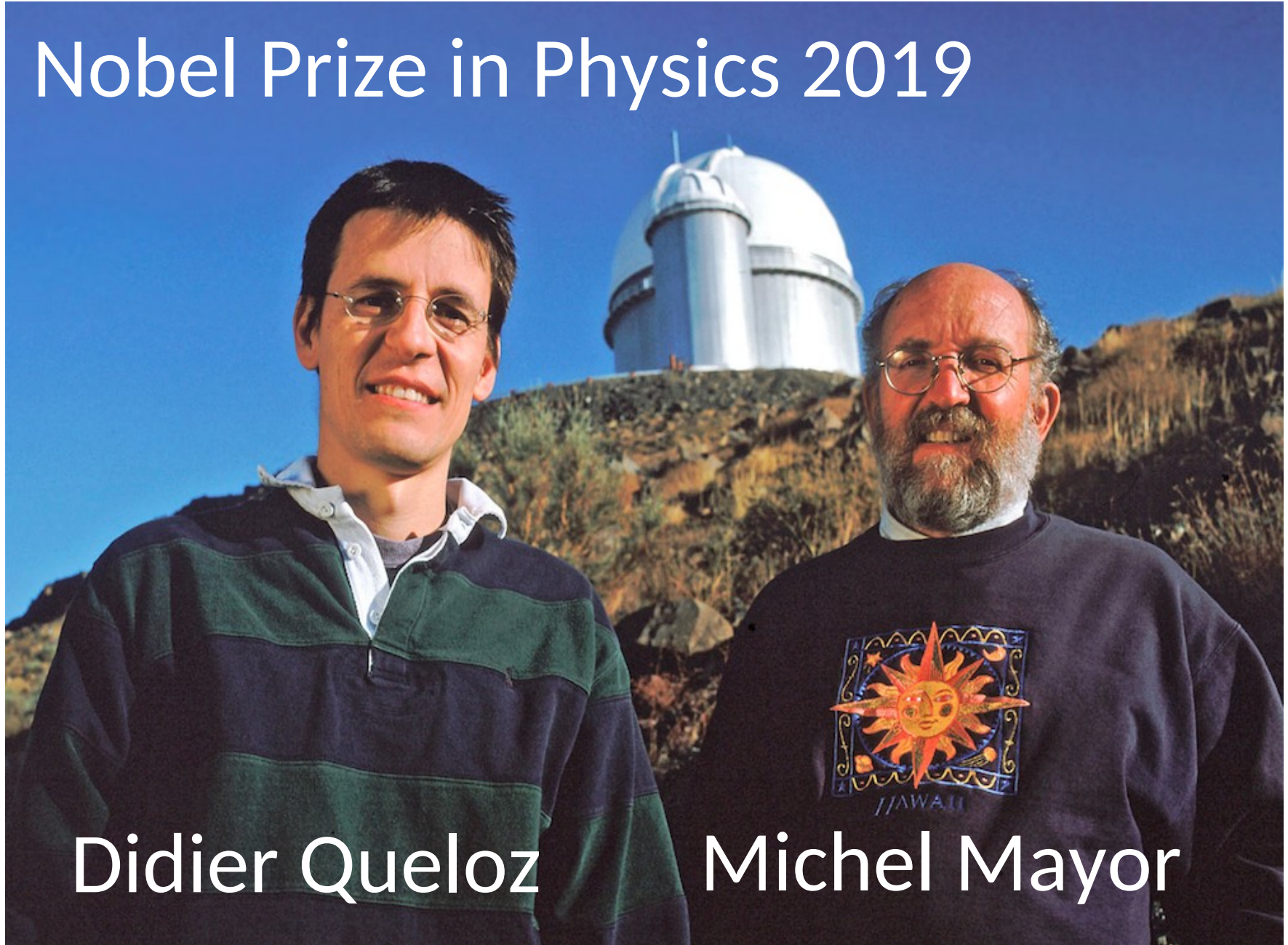


HATHAWAY NASA/ARC 2016/10



Stellar activity is relevant for exoplanet science

Nobel Prize in Physics 2019

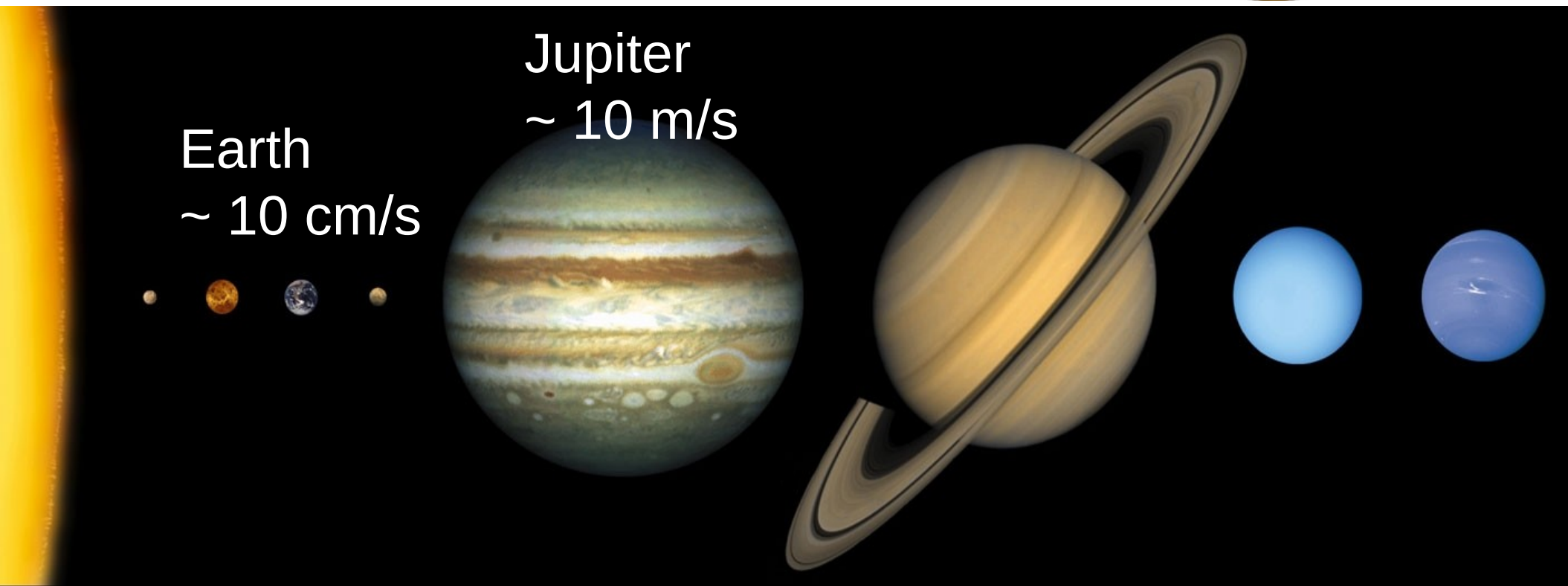
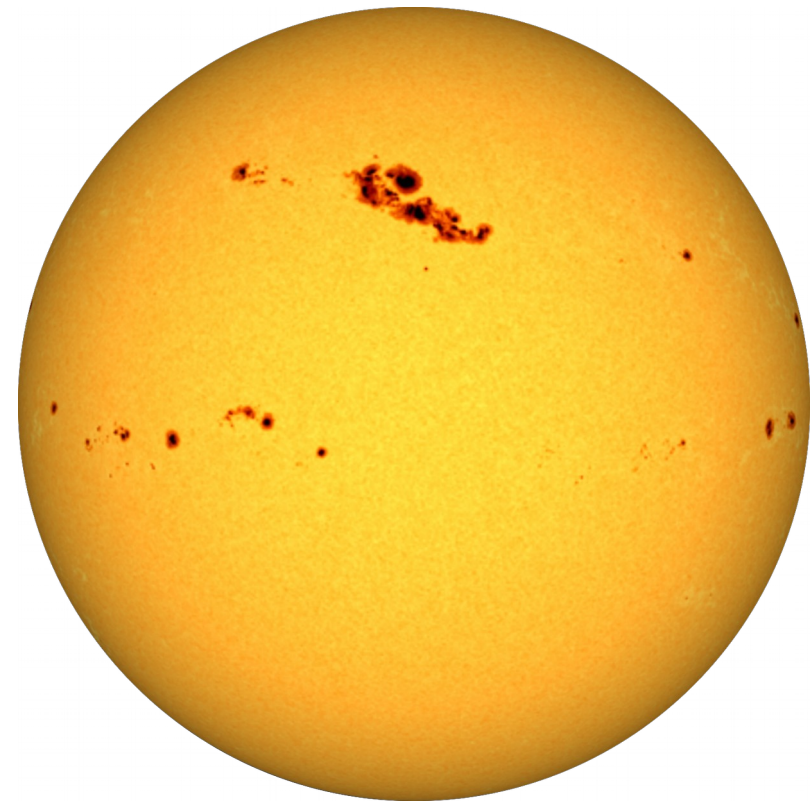


Didier Queloz

Michel Mayor

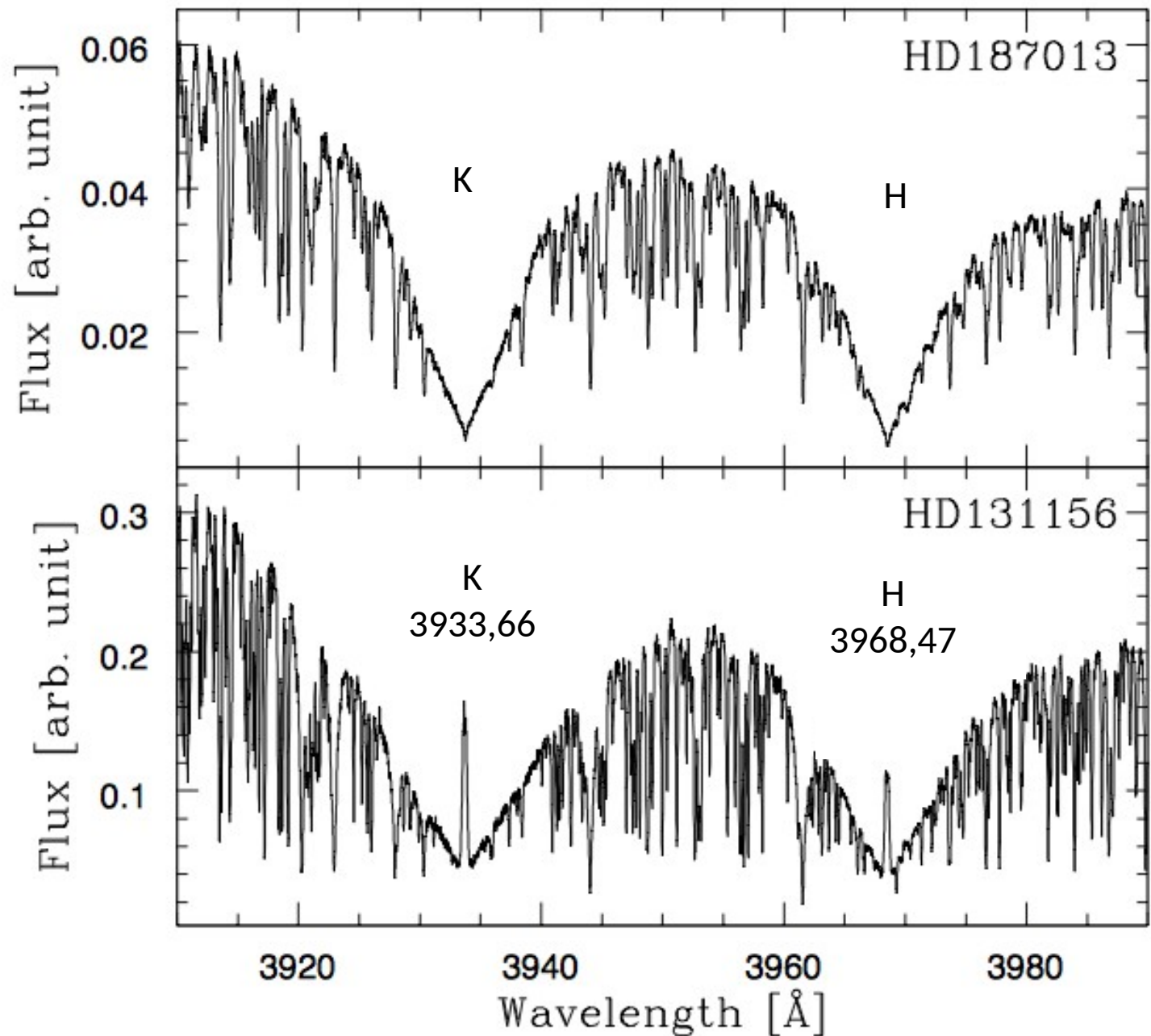
Challenges for detecting Earth 2.0

- Current instrumentation 1m/s
- Earth = 9 cm/s (\sim G-CLEF)
- **Stellar activity noise \sim 1 m/s**



In stars we cannot observe spots

Rotation and activity cycles can be studied through CaII H and K lines.

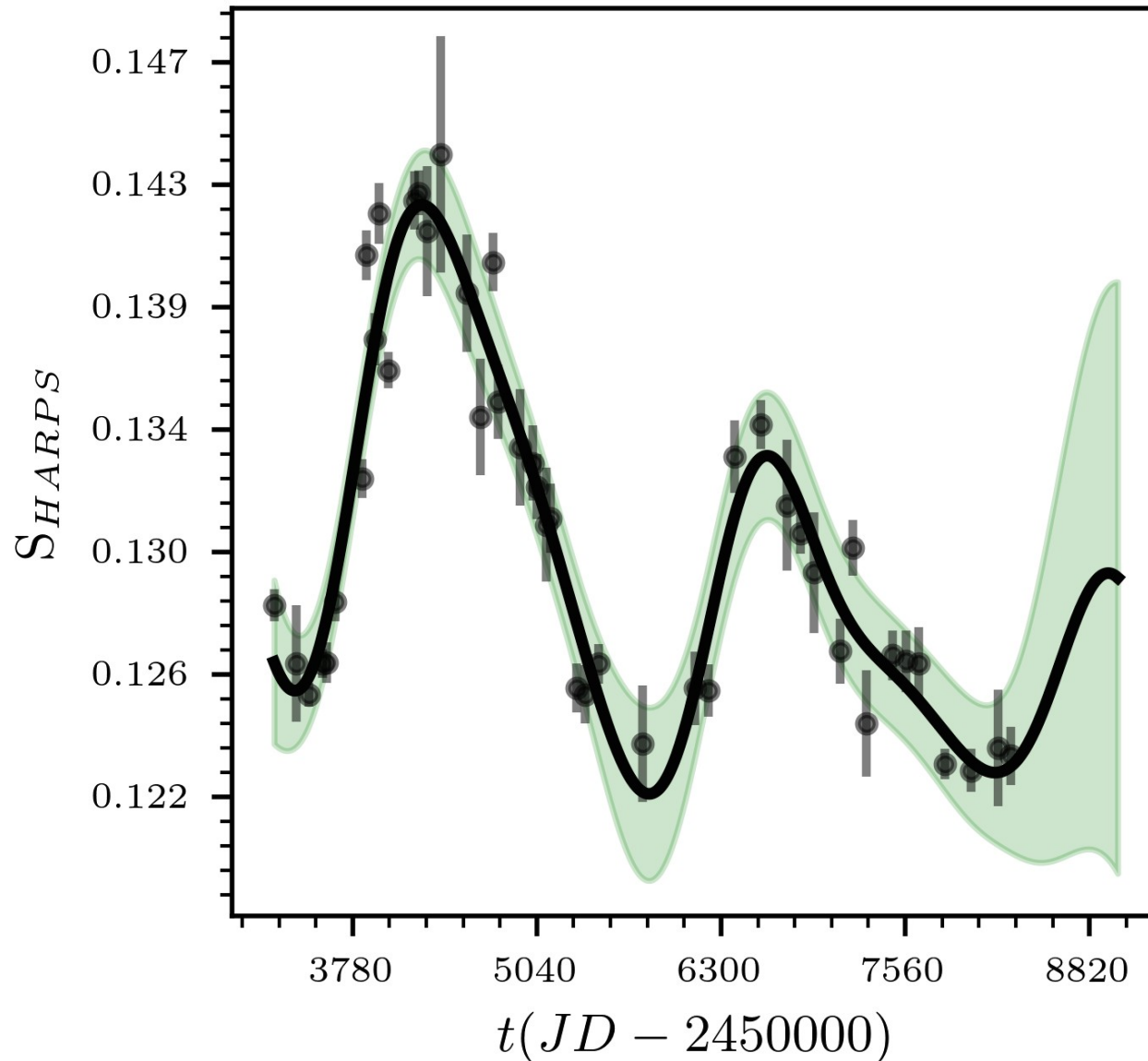


Boisse et al. 2010
A&A 523, A88

Fig. C.1. Two SOPHIE spectra of the region of the CaII H and K lines between 3900 and 4000 Å. *Bottom:* Active star. *Top:* Non active star.

Activity cycle in the solar twin 18 Sco: 7 years

HIP79672



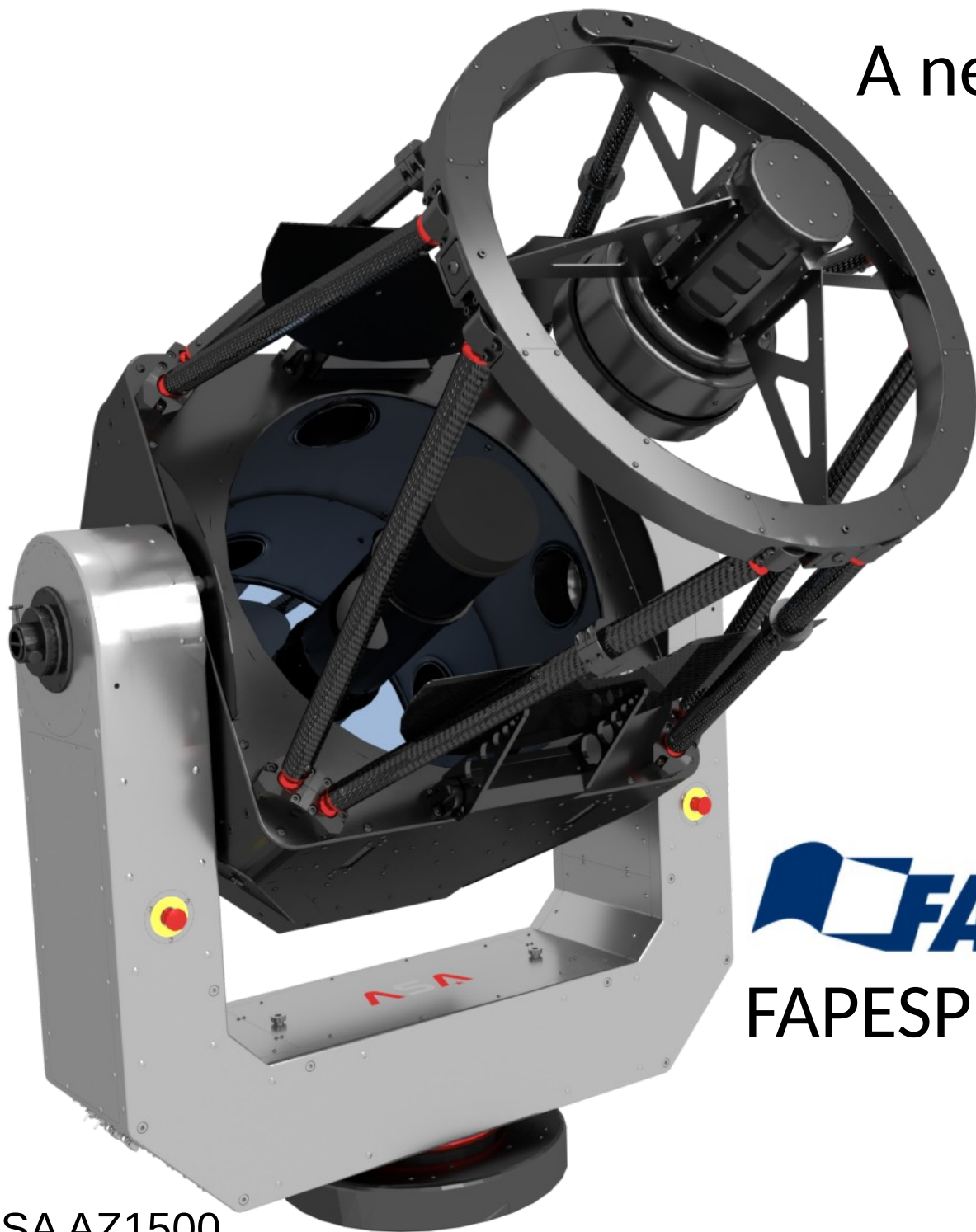
Mainly HARPS/ESO,
complemented with
HIRES/Keck

Total: ~ 15 years of
observations

Perfect science for
OPD

Potential projects for small telescopes (1 - 2m)

- Magnetic activity cycles
- Stellar rotation periods
- Flares in stars
- Variations in massive stars (LBVs, B[e])
- Determination of stellar parameters
- Binary stars



A new telescope for OPD

Ritchey-Chrétien
Alt-Az telescope

Nasmyth focus

Diameter: 1 m – 1,5 m

Focal ratio: f6



FAPESP funds granted for 1 m

ASA AZ1500

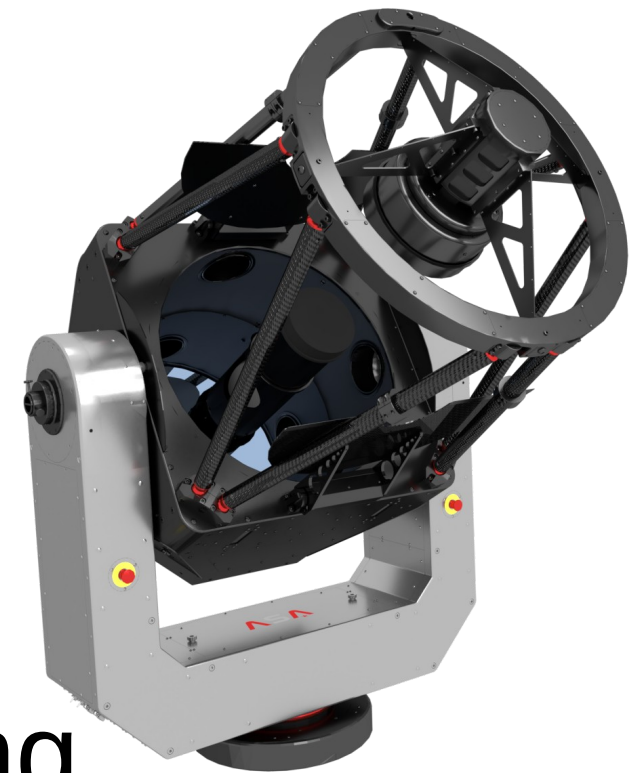
Echelle Spectrograph

- Coverage of the H and K lines (393, 397 nm)
- Ideally from 389 nm to 673 nm, to cover CaII H and K, H α (656 nm), lithium (671 nm)
- $R \geq 15\,000$
- Echarpe?

$R = 50\,000$, 390 – 890 nm

Summary

- ~~1 or~~ 1,5 meter telescope
- Echelle spectrograph
- Several programs requiring spectroscopic time series
- Free access to the community



@DrJorgeMelendez

Departamento de Astronomia, IAG/USP

