

Image credit: Max Haeberle, MPIA



SDSS-V in a nutshell

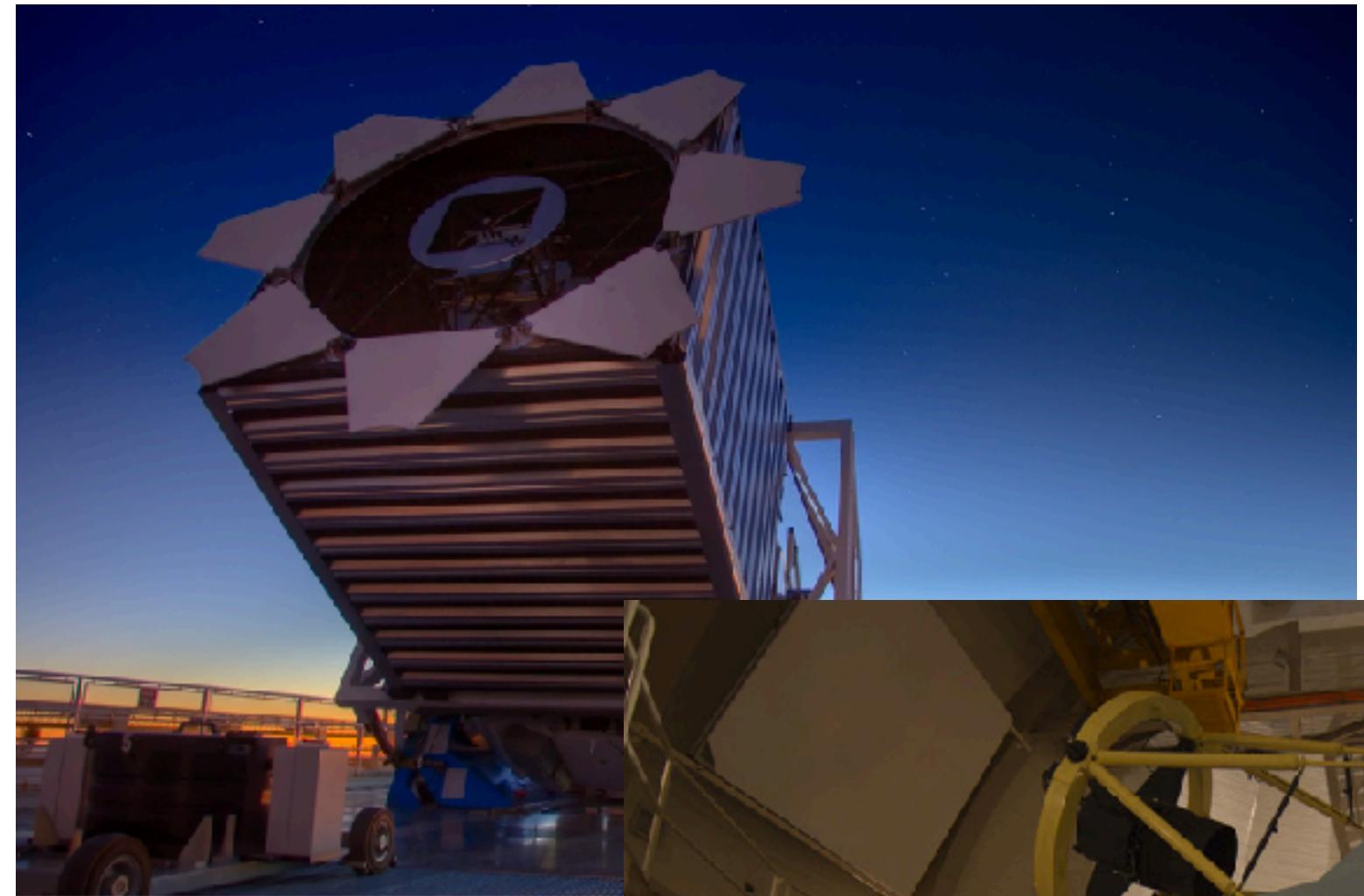
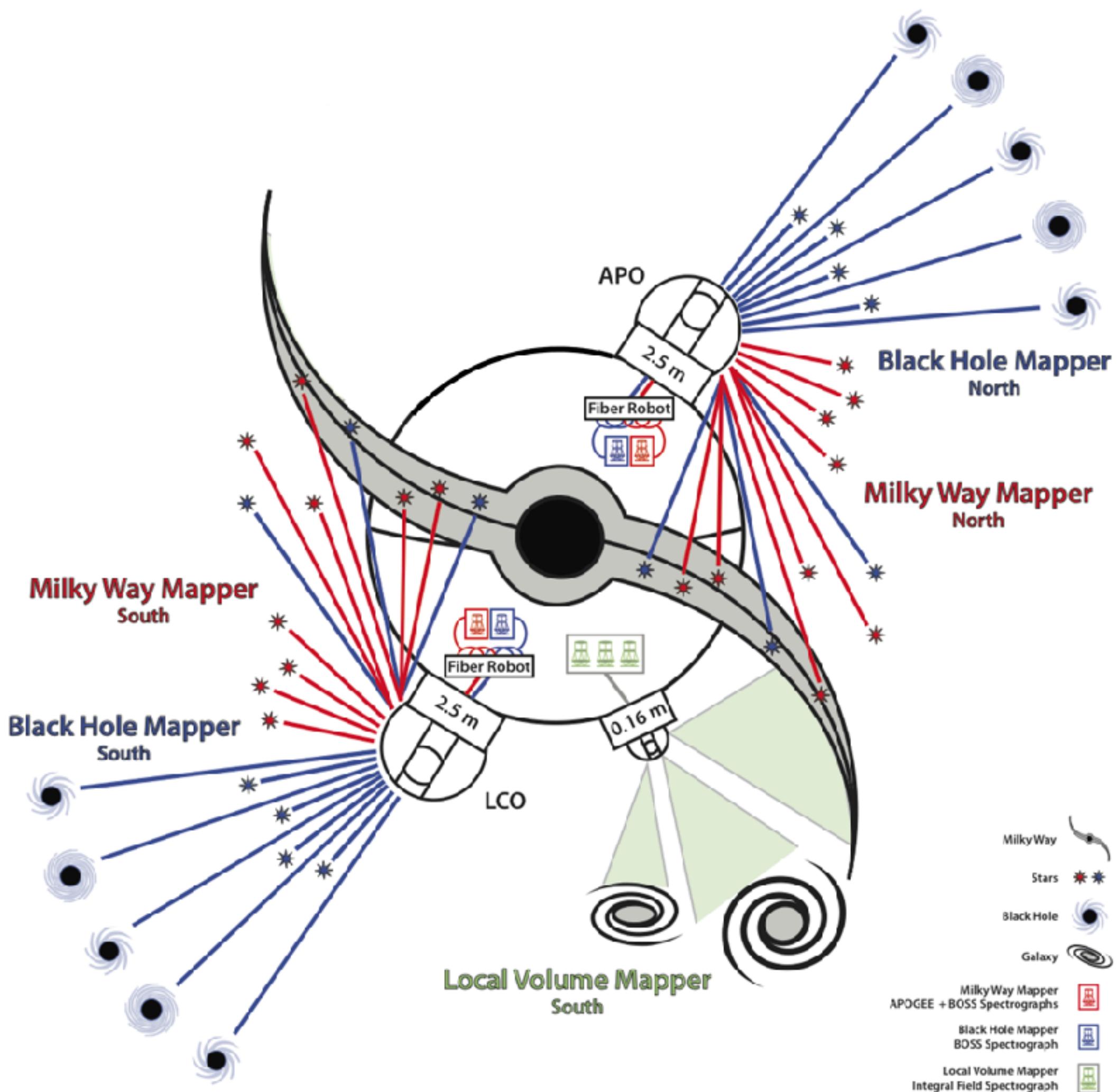
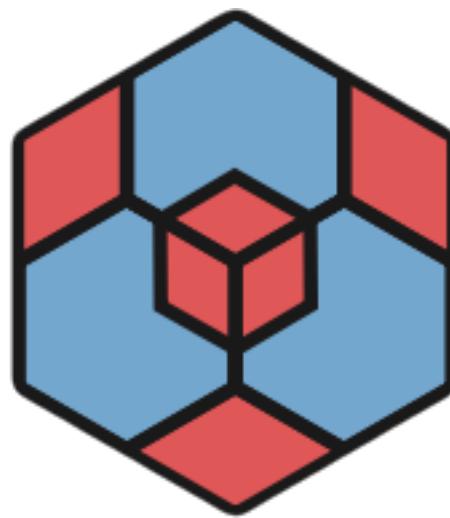
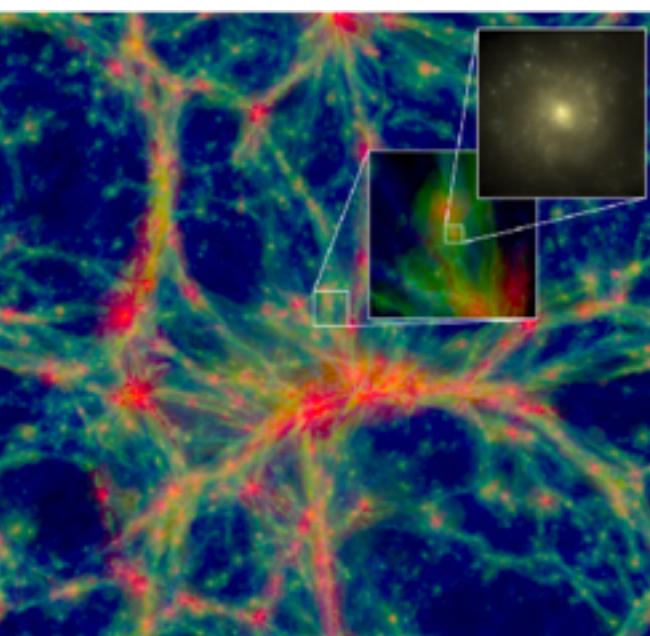
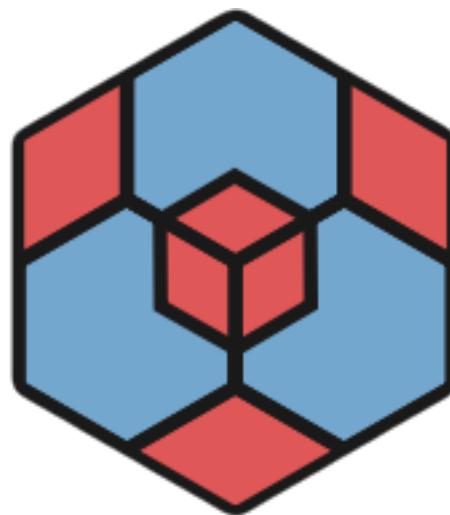


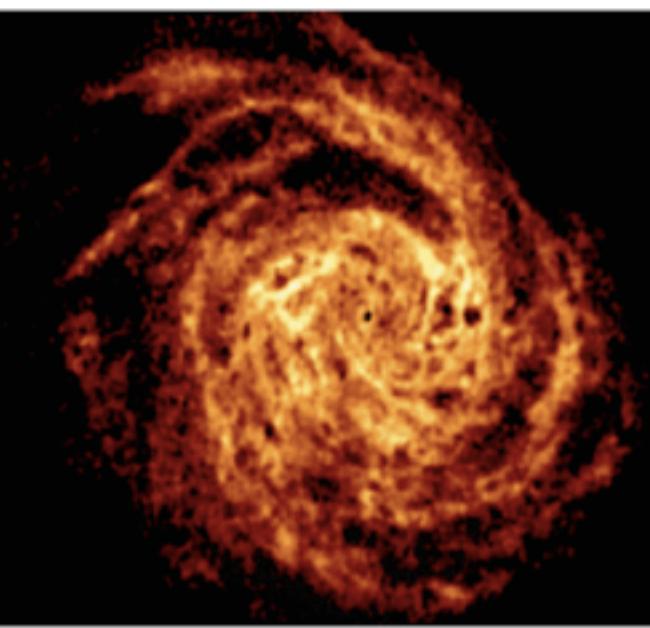
Image credit: Nick Konidaris



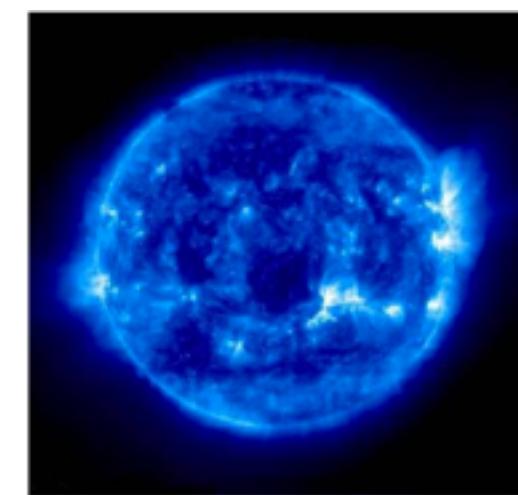
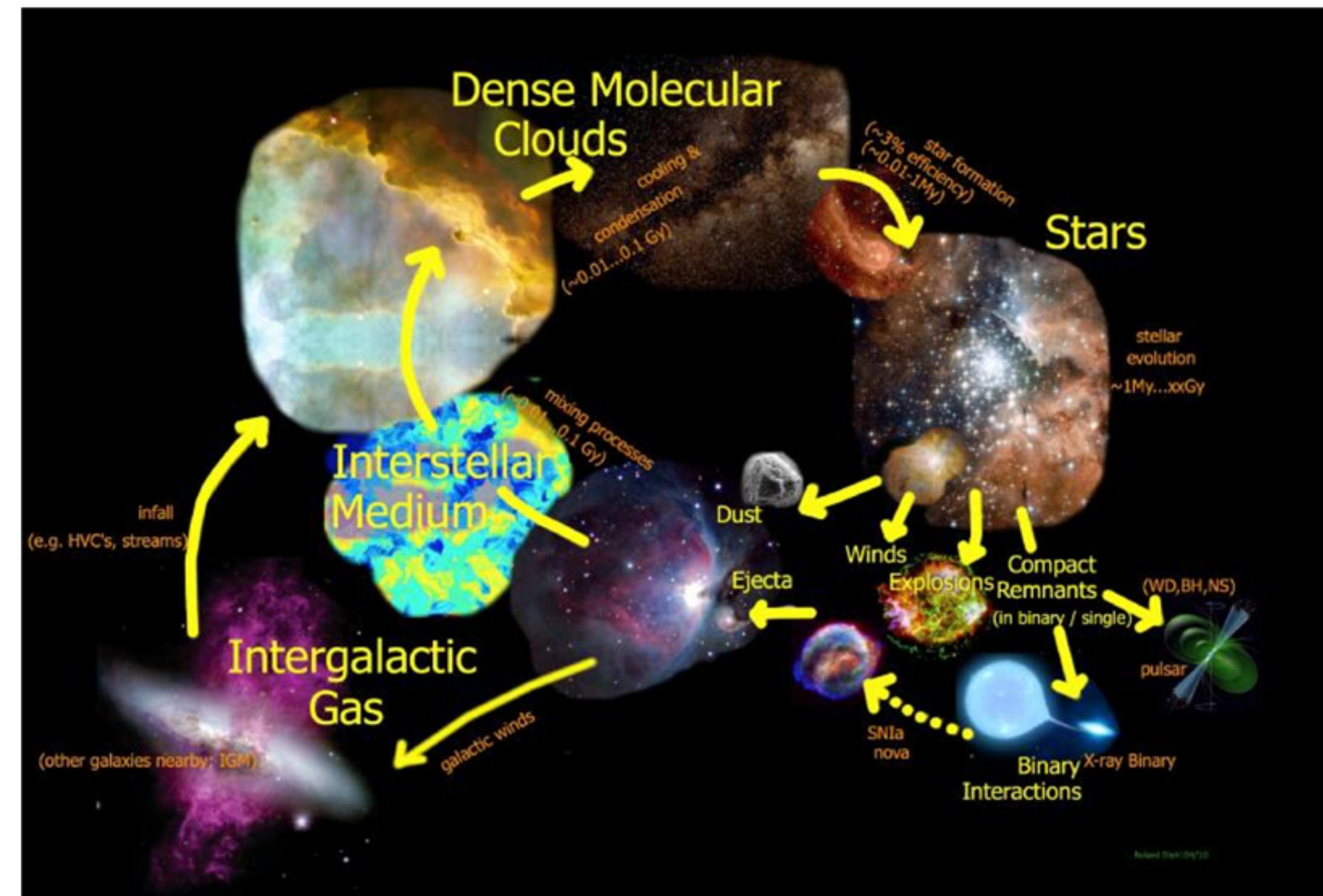
Star Formation



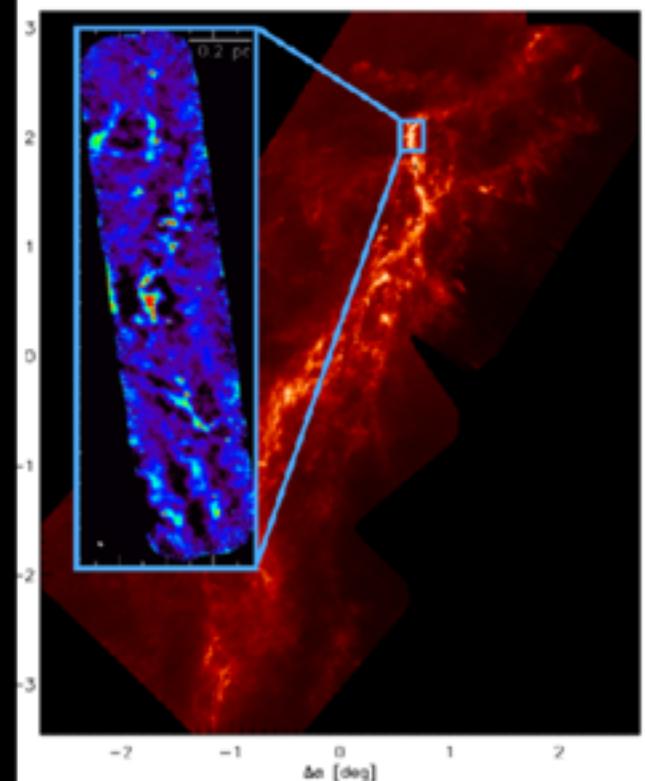
~ Mpc



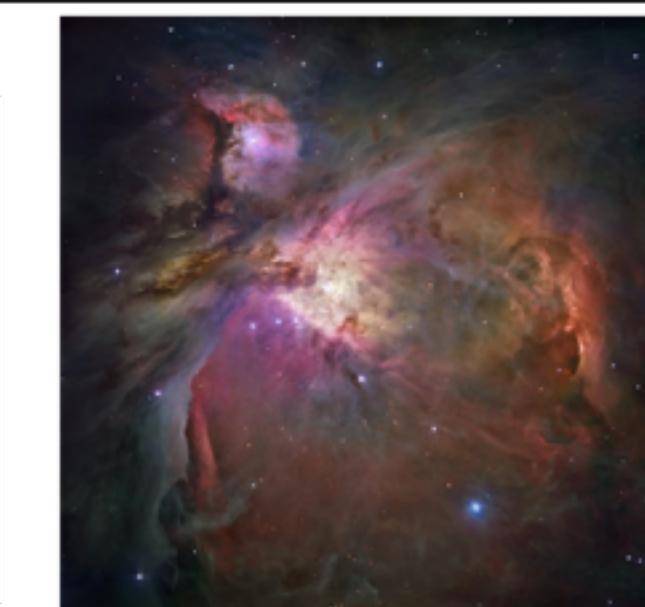
100 pc to kpc



~ 10^{-6} pc



~ 0.1 pc

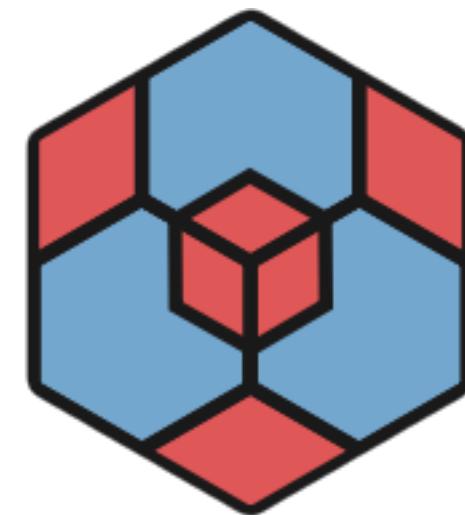


~ 10 pc

Star Formation is a multi-scale process ($\mathcal{O} \sim 10^{12}$) that sets the thermodynamics, structure, and chemistry of the ISM, and regulates the growth of galaxies.



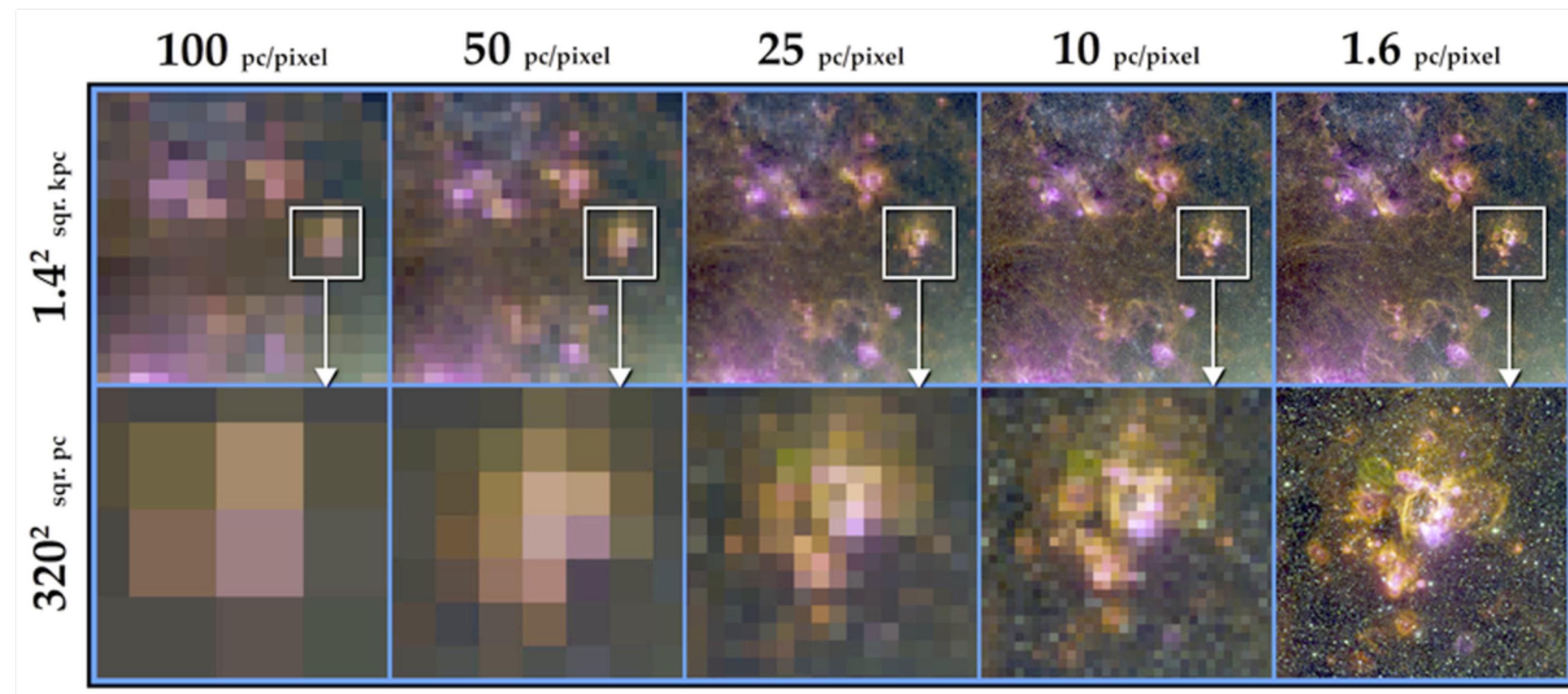
Spatially Sampling the ISM



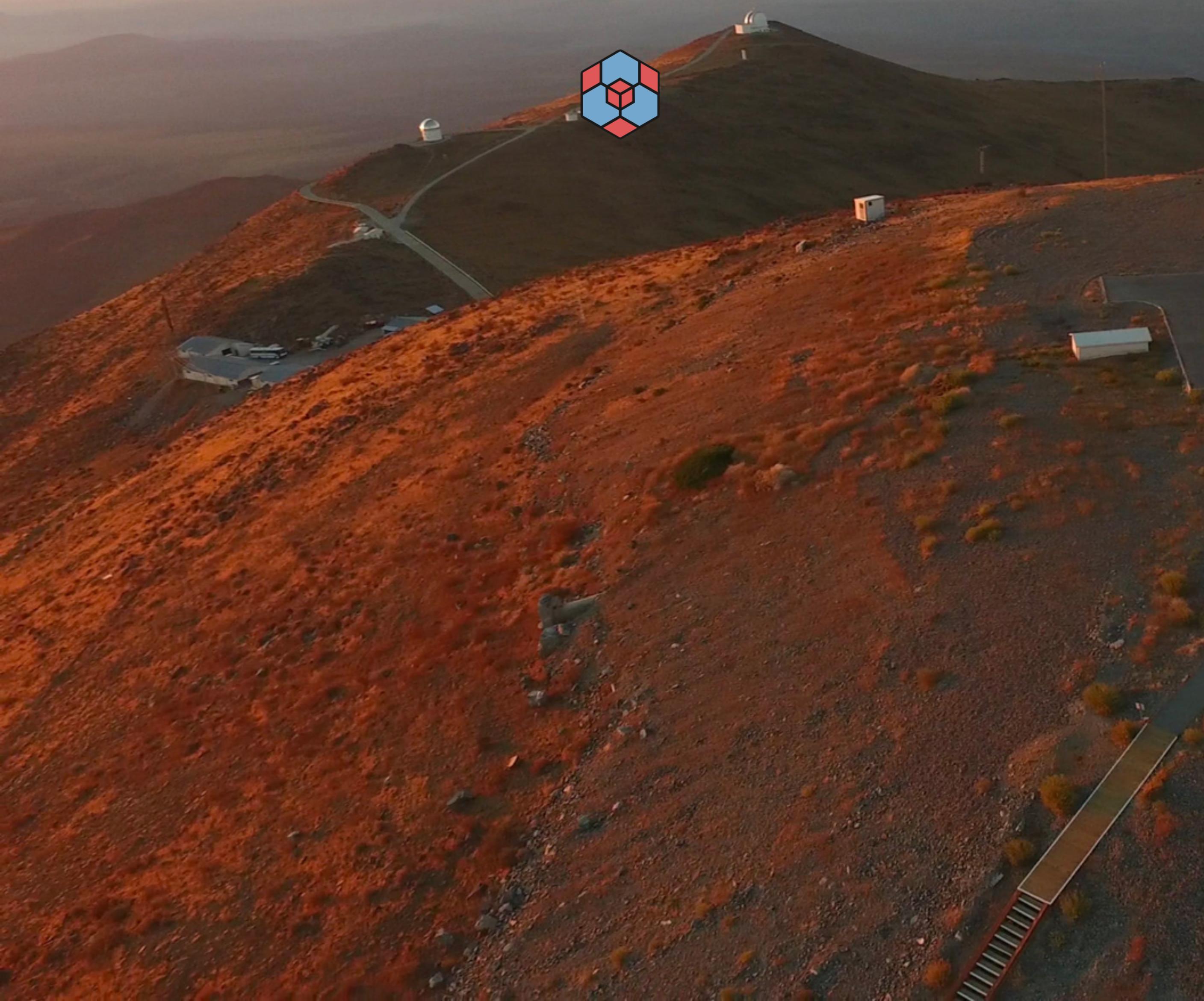
At <100 pc resolution we start separating individual SF regions

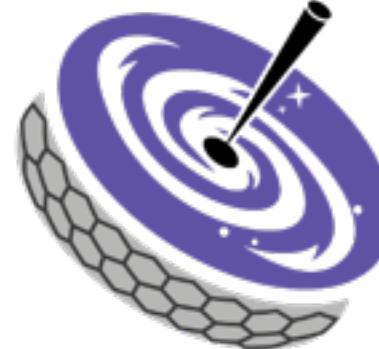
At <25 pc resolution we start resolving the the filamentary structure of the ISM

At <10 pc resolution we start resolving their inner structure

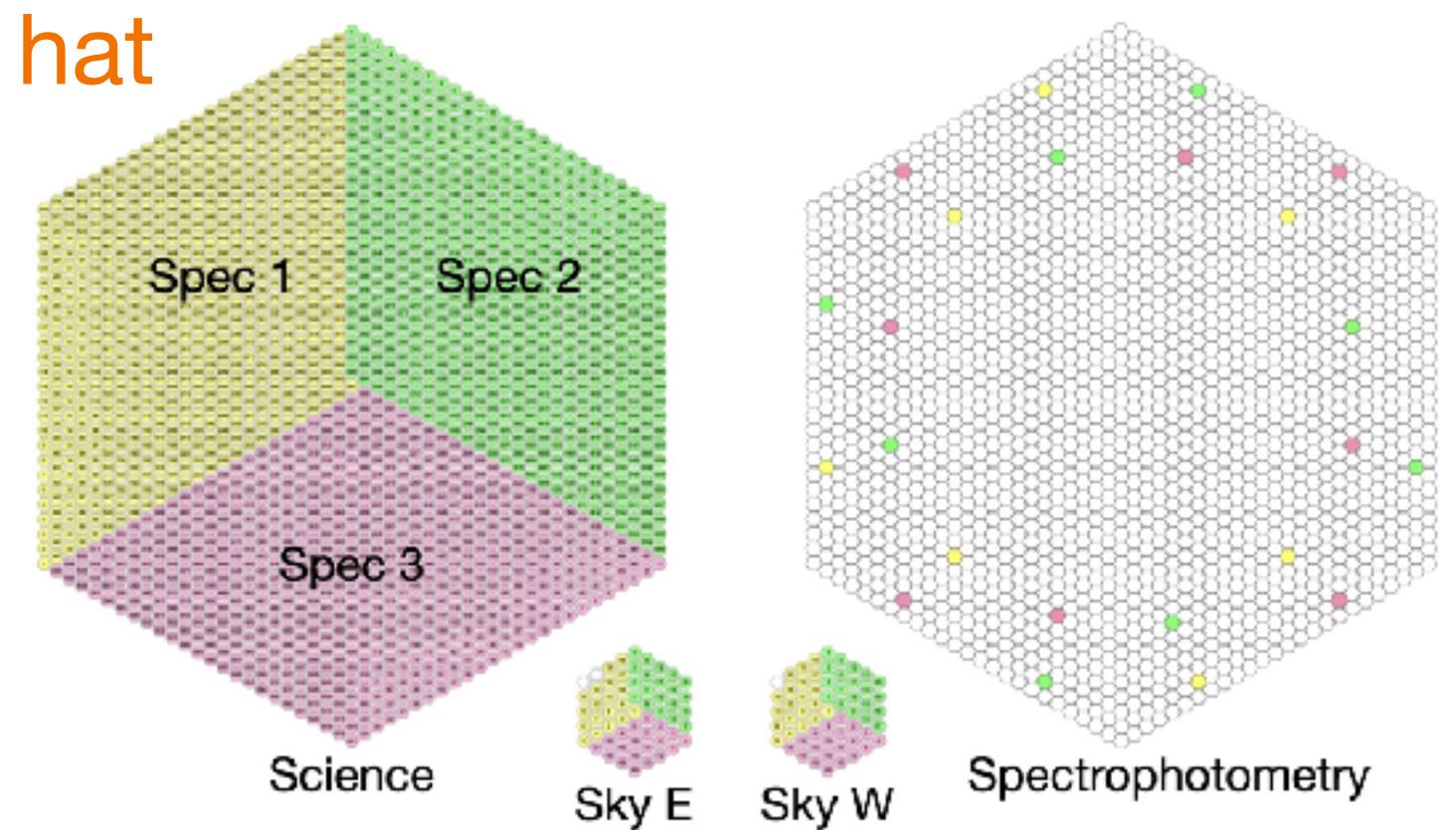
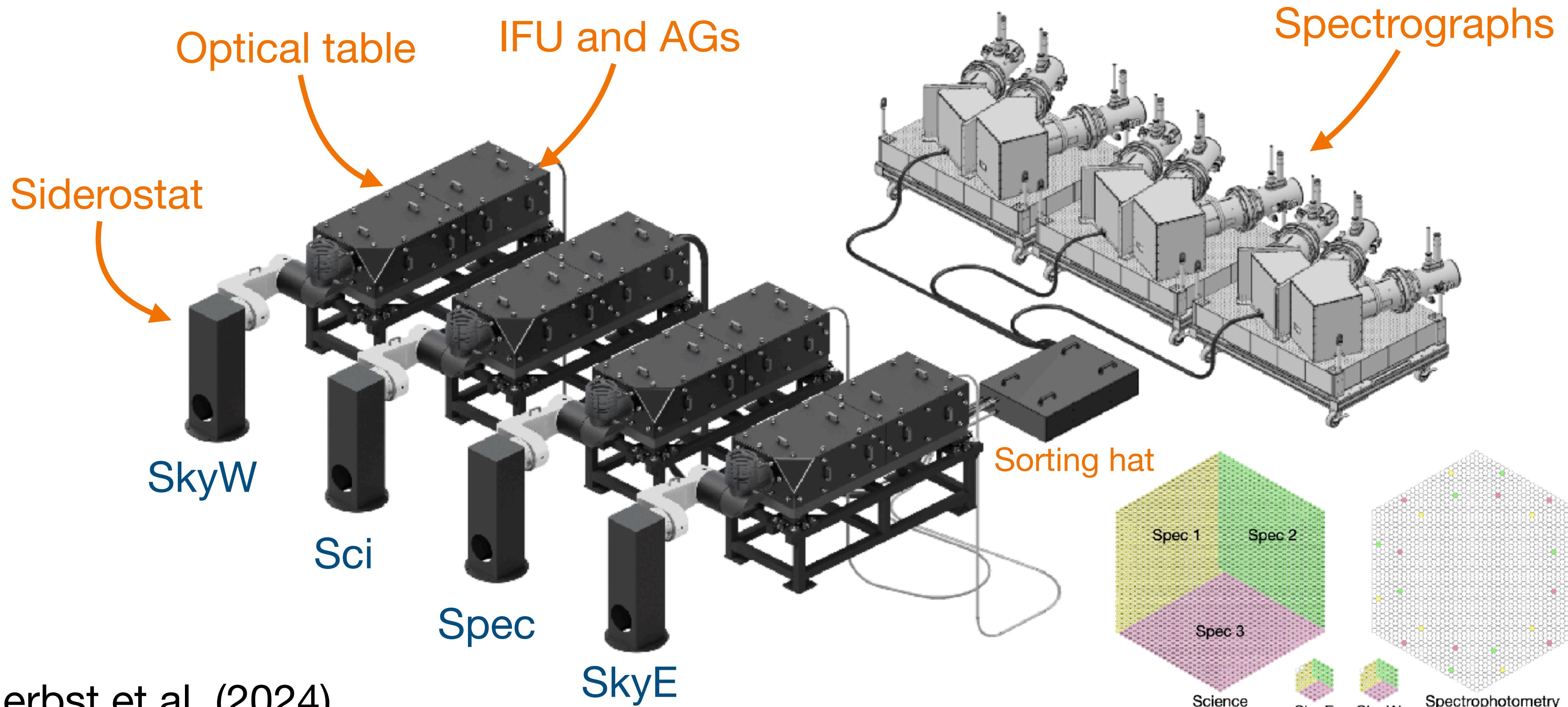
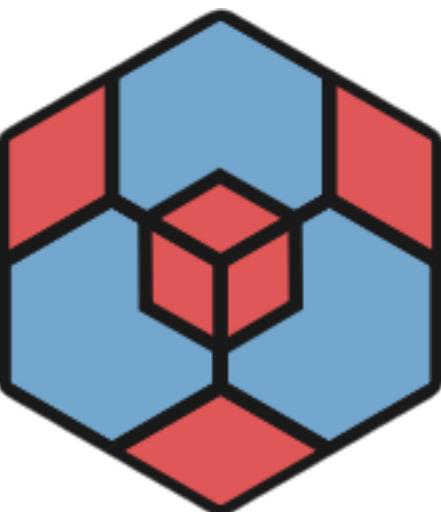


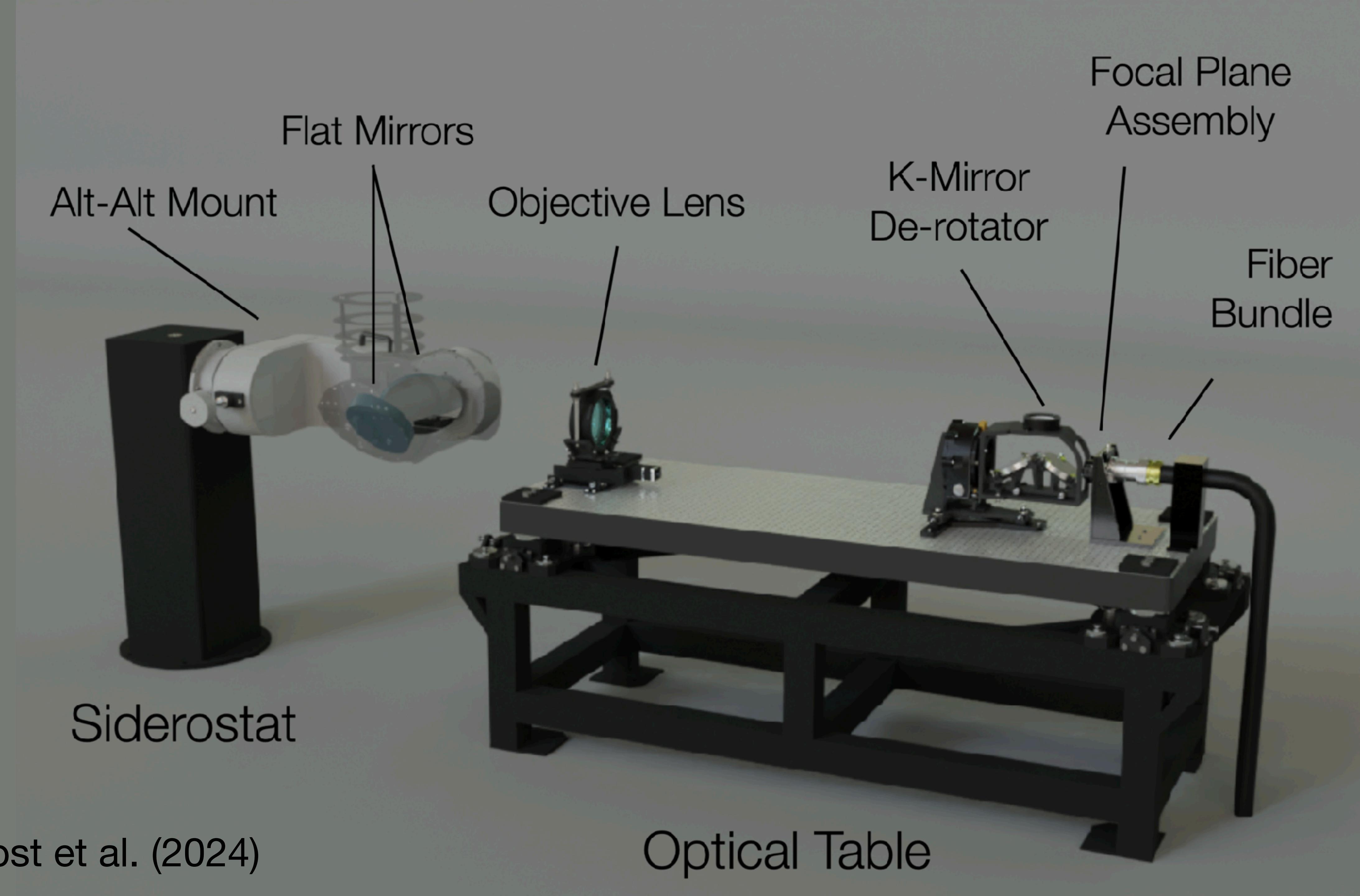
LVM Facility





LVM Instrument Overview





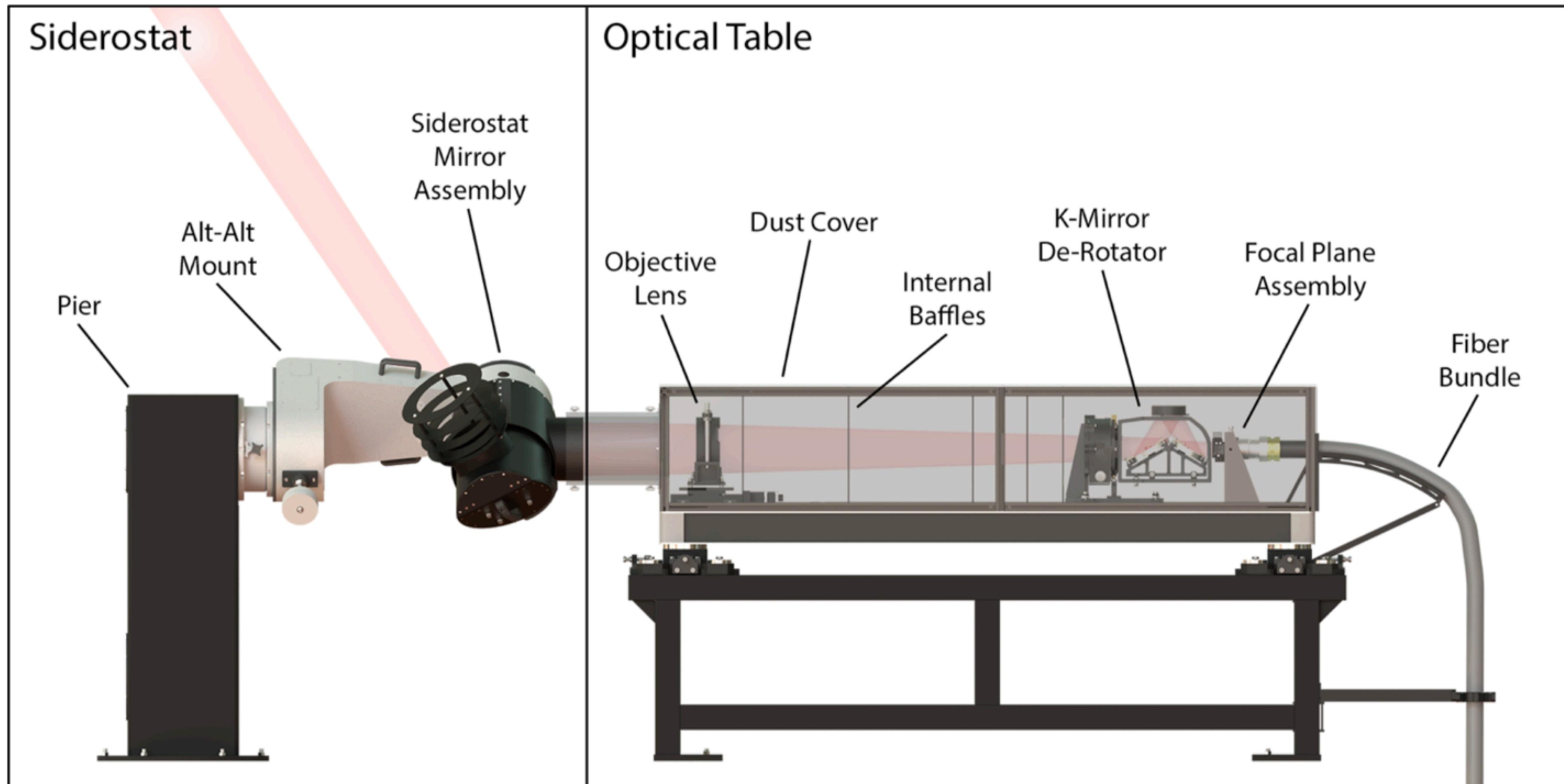
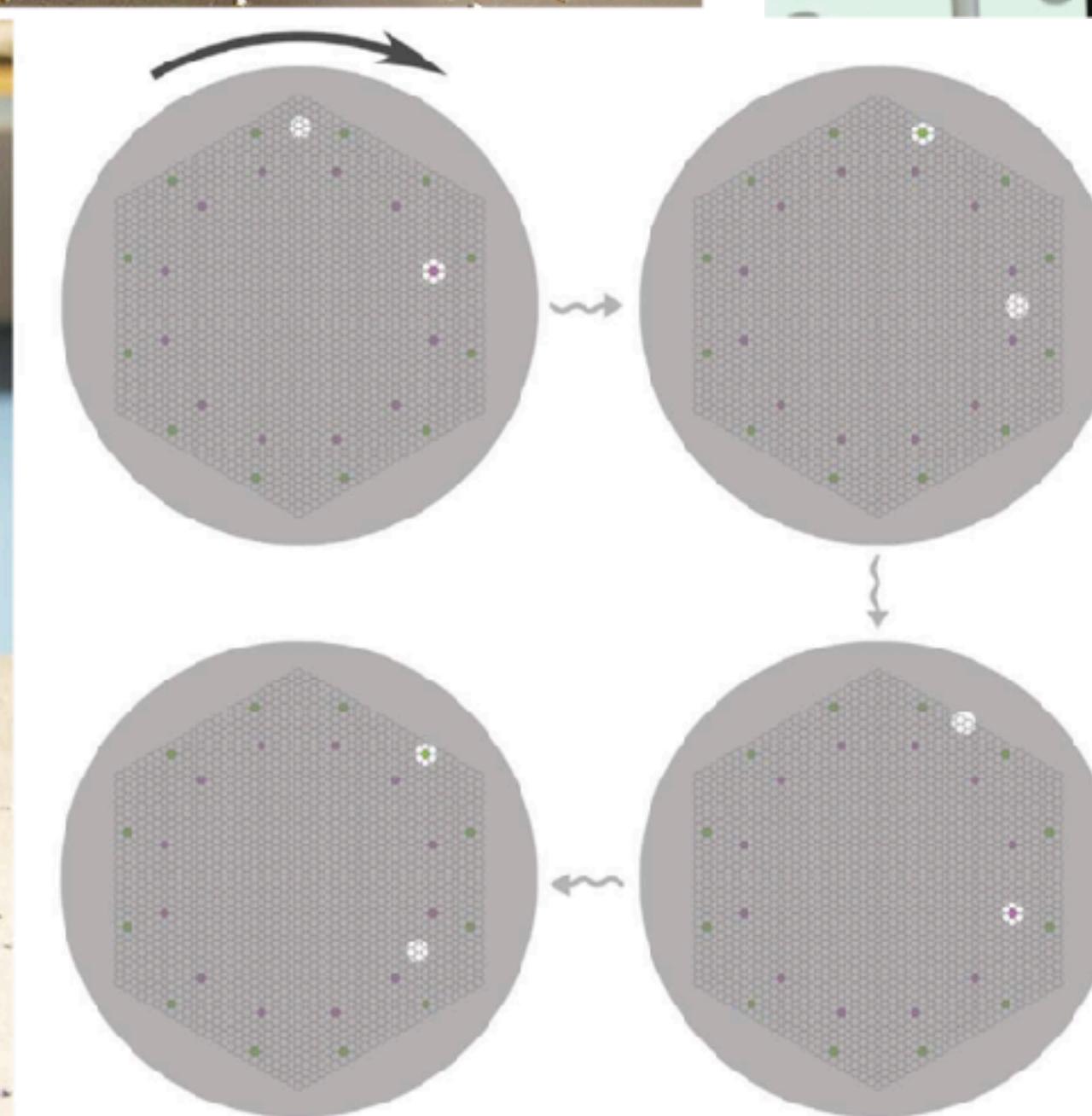
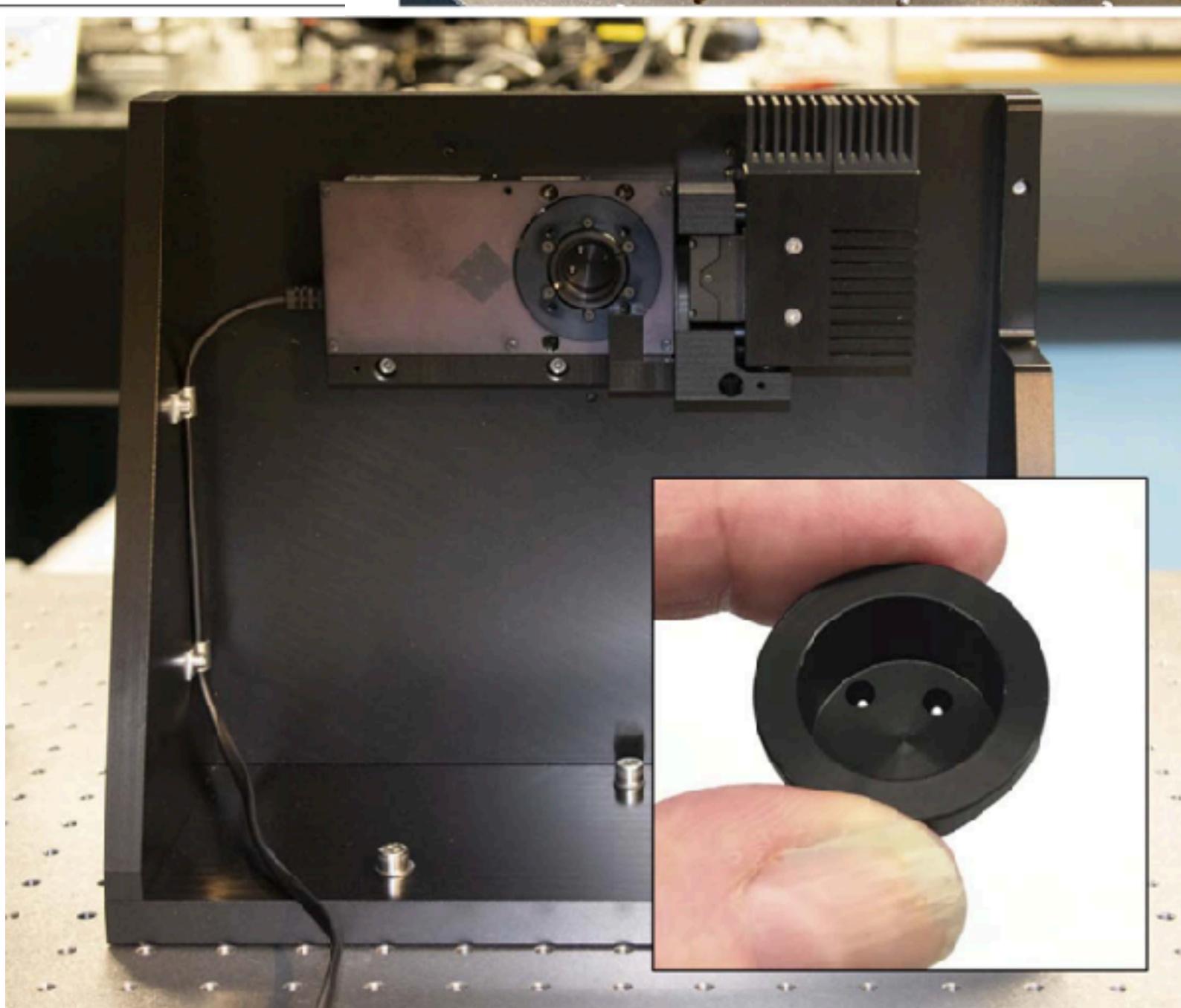
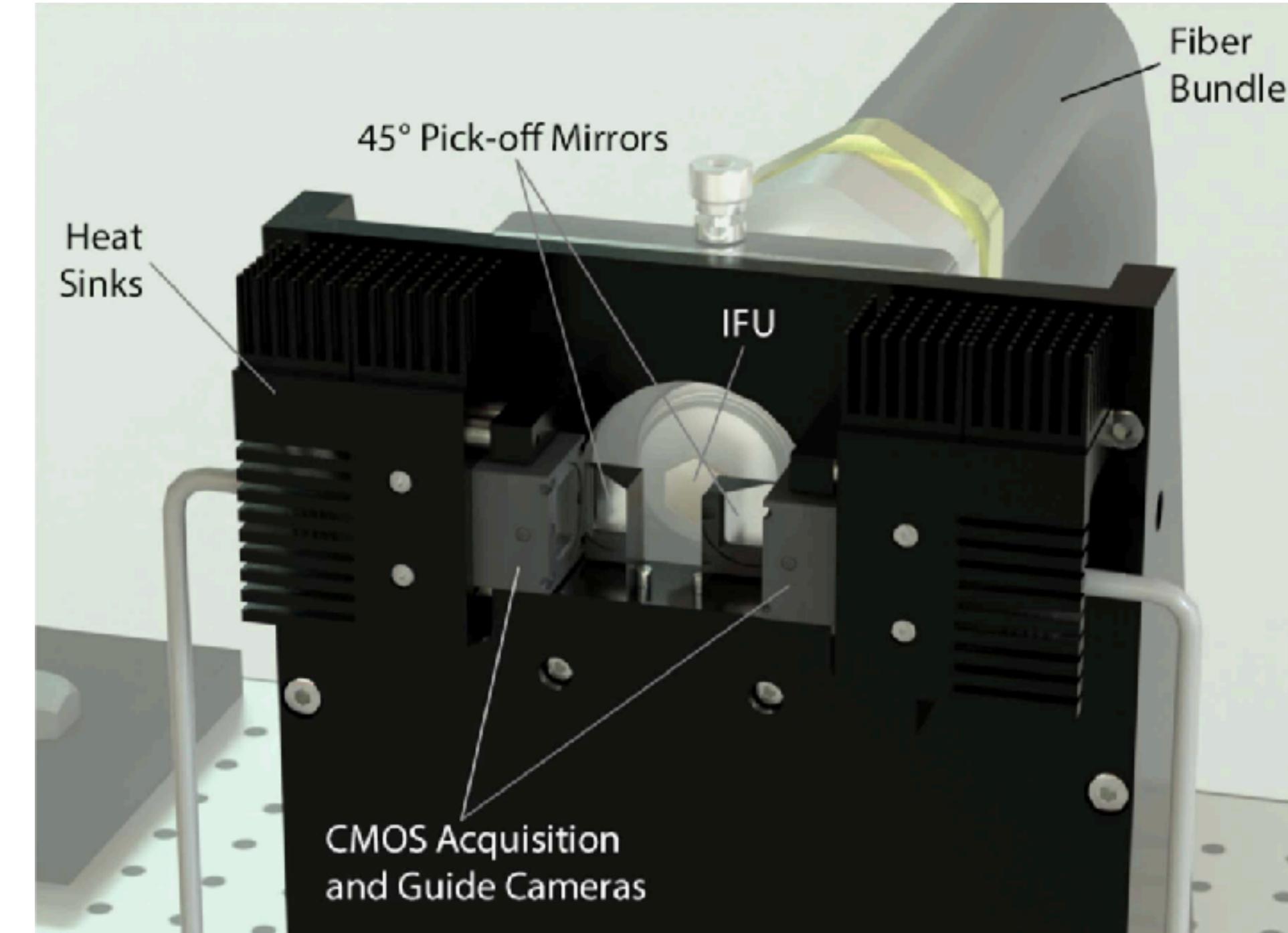
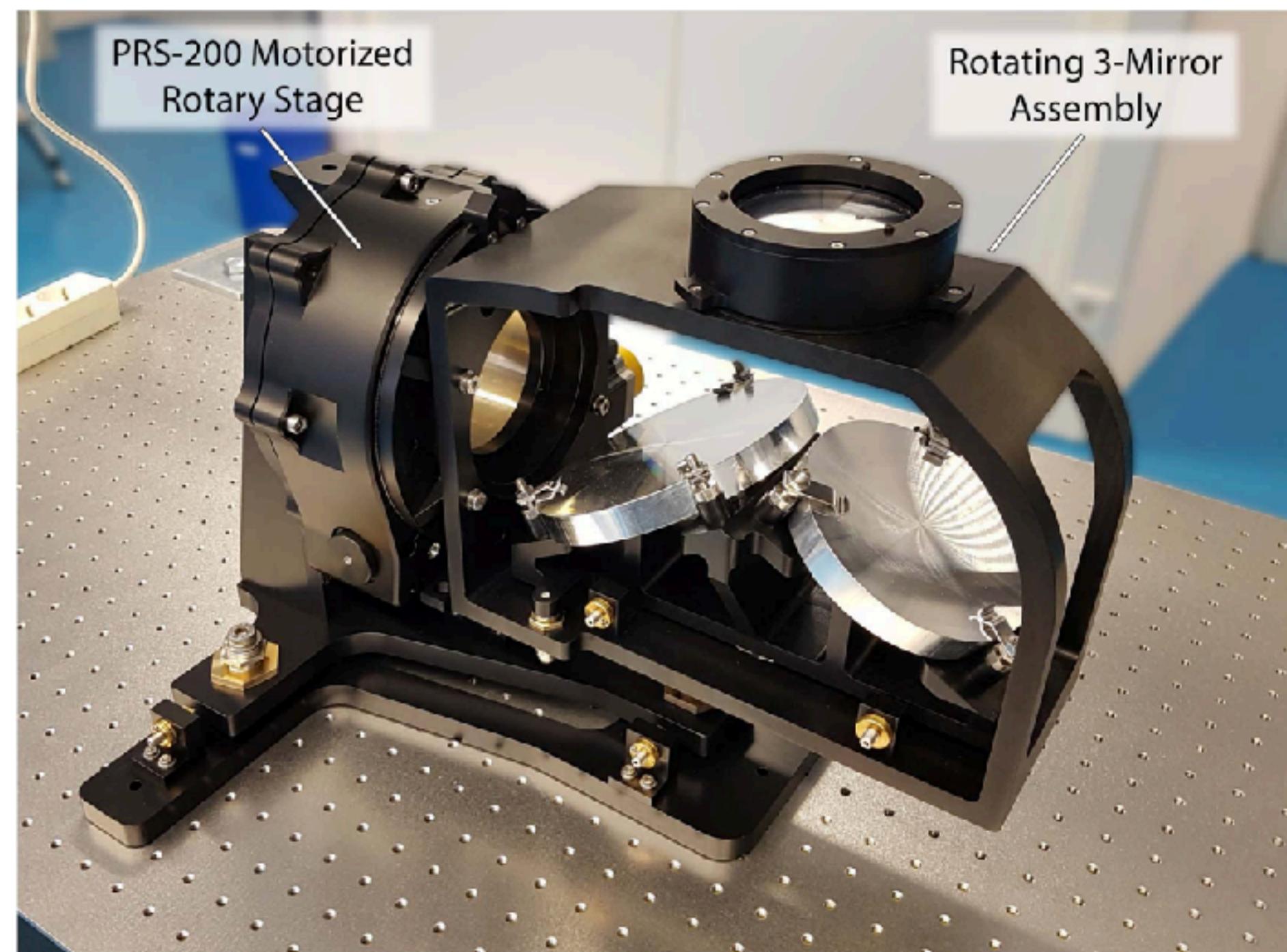
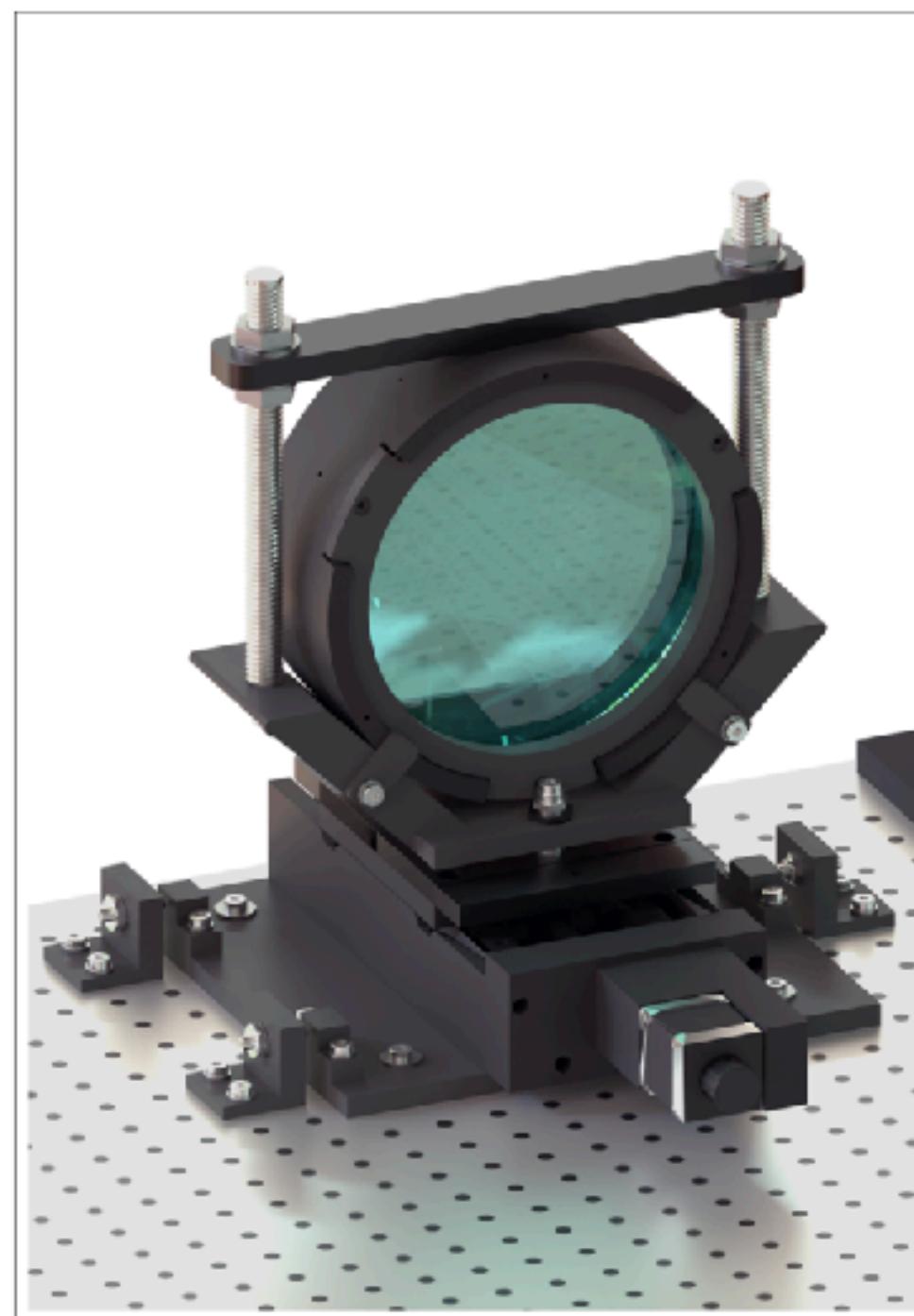


Figure 2: LVM telescope architecture.



Herbst et al. (2024)

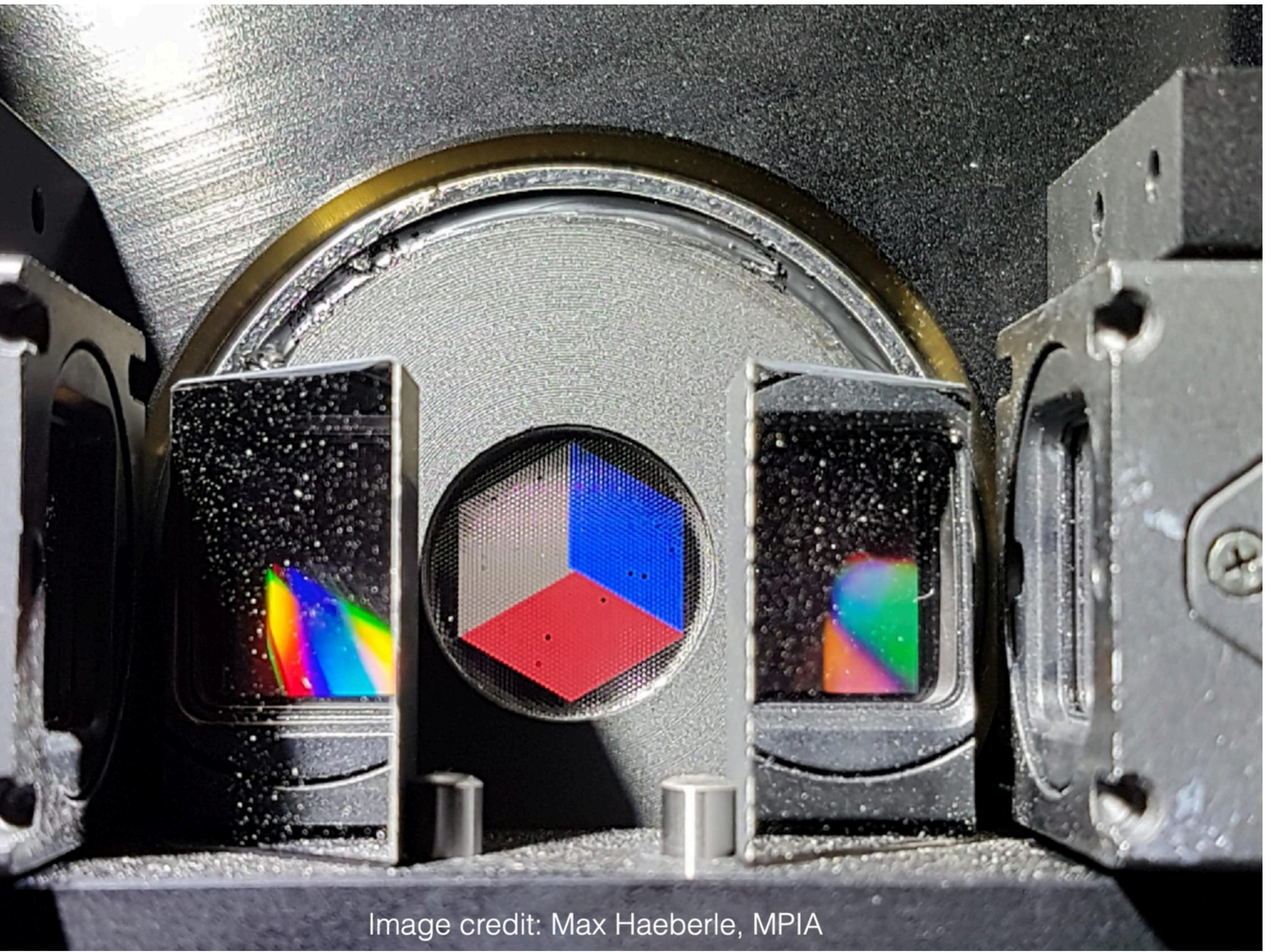
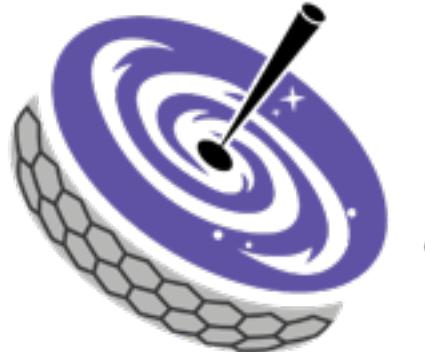
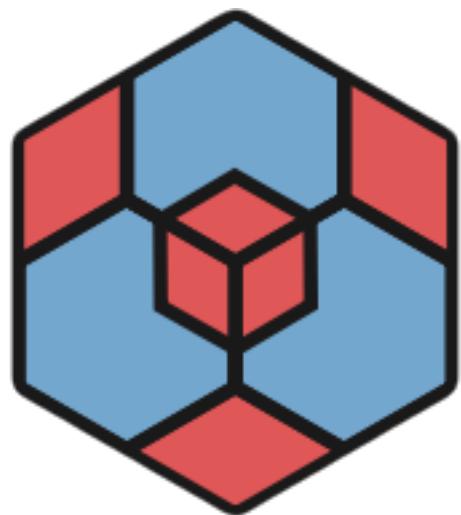


Image credit: Max Haeberle, MPIA

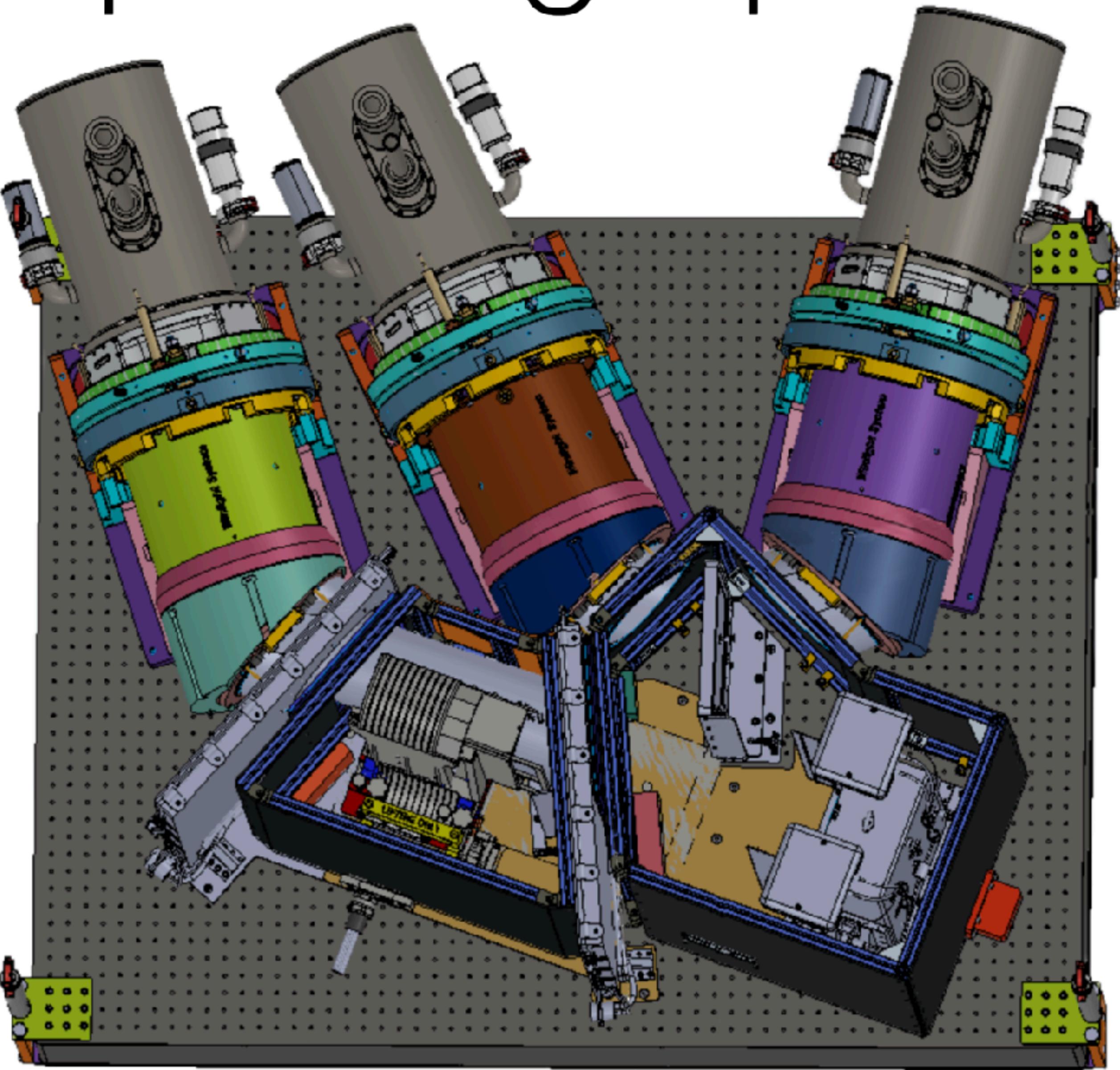
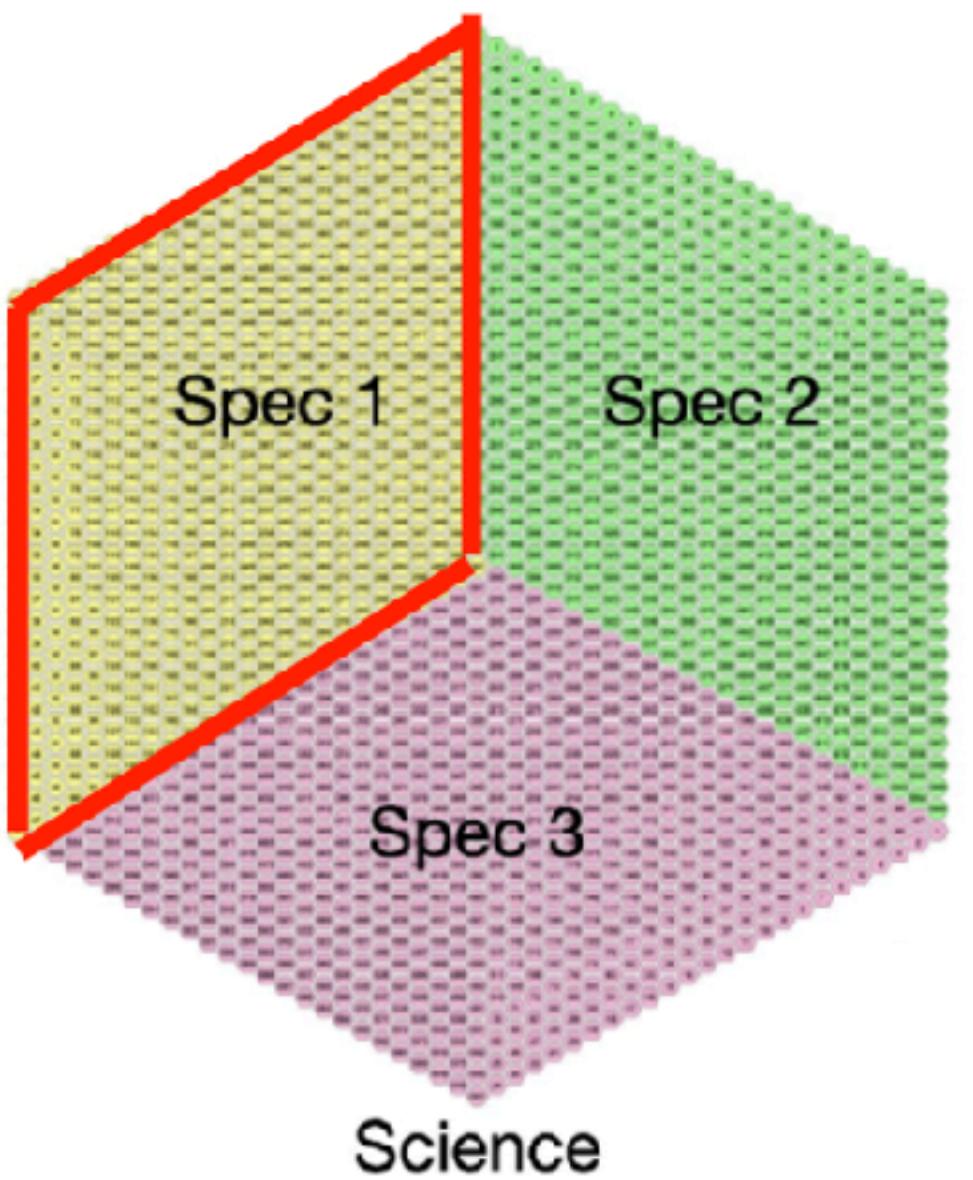


SDSS-v

LVM Spectrographs

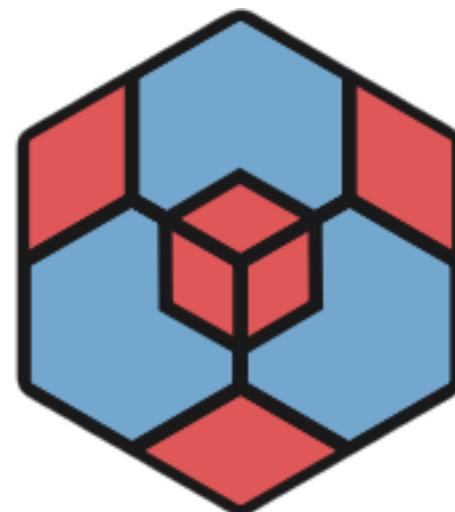


- 3 Units
- 3 Channels / unit
- 648 fibers / unit
- 4k CCD's
- R~4800 @ H α

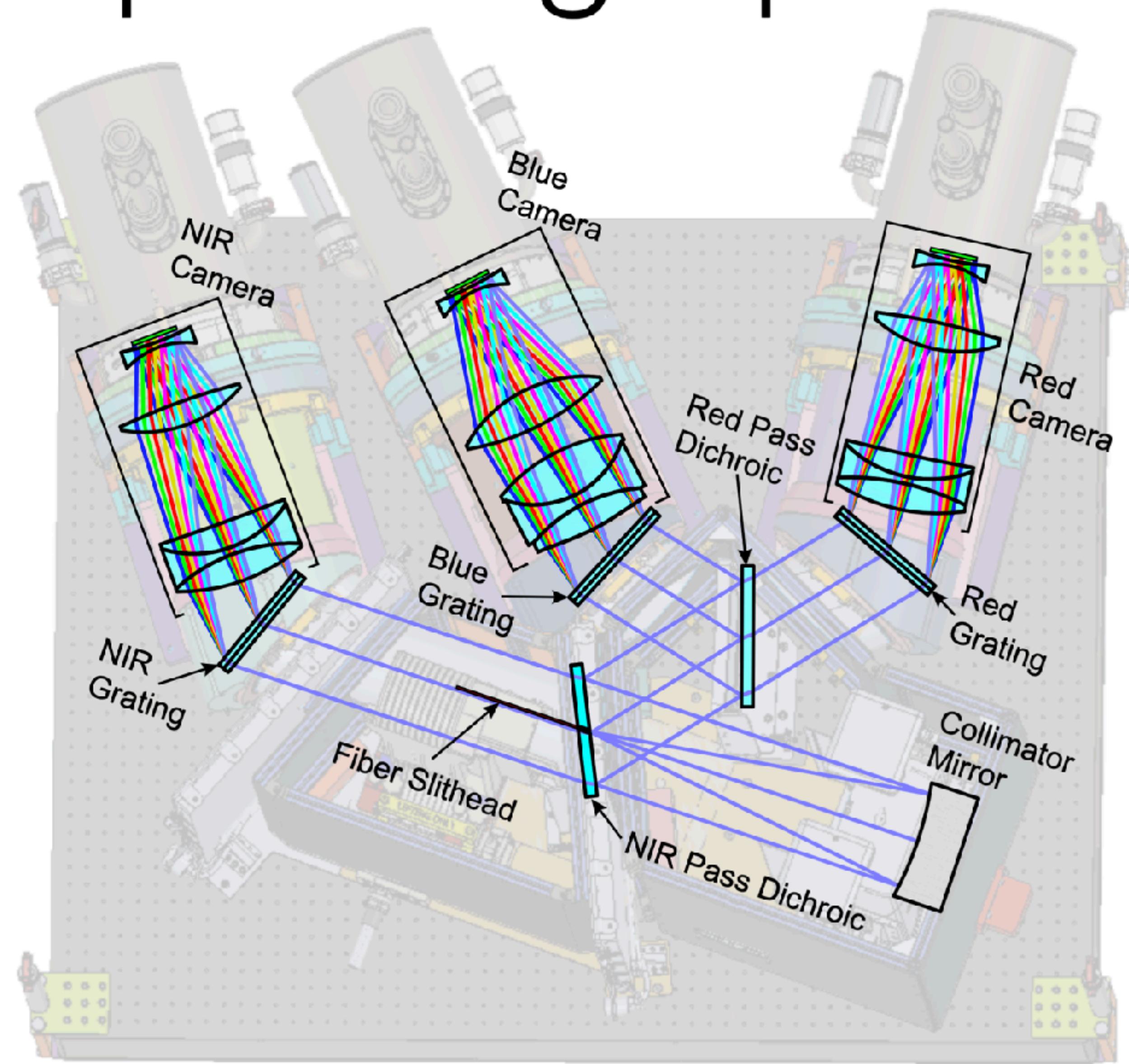
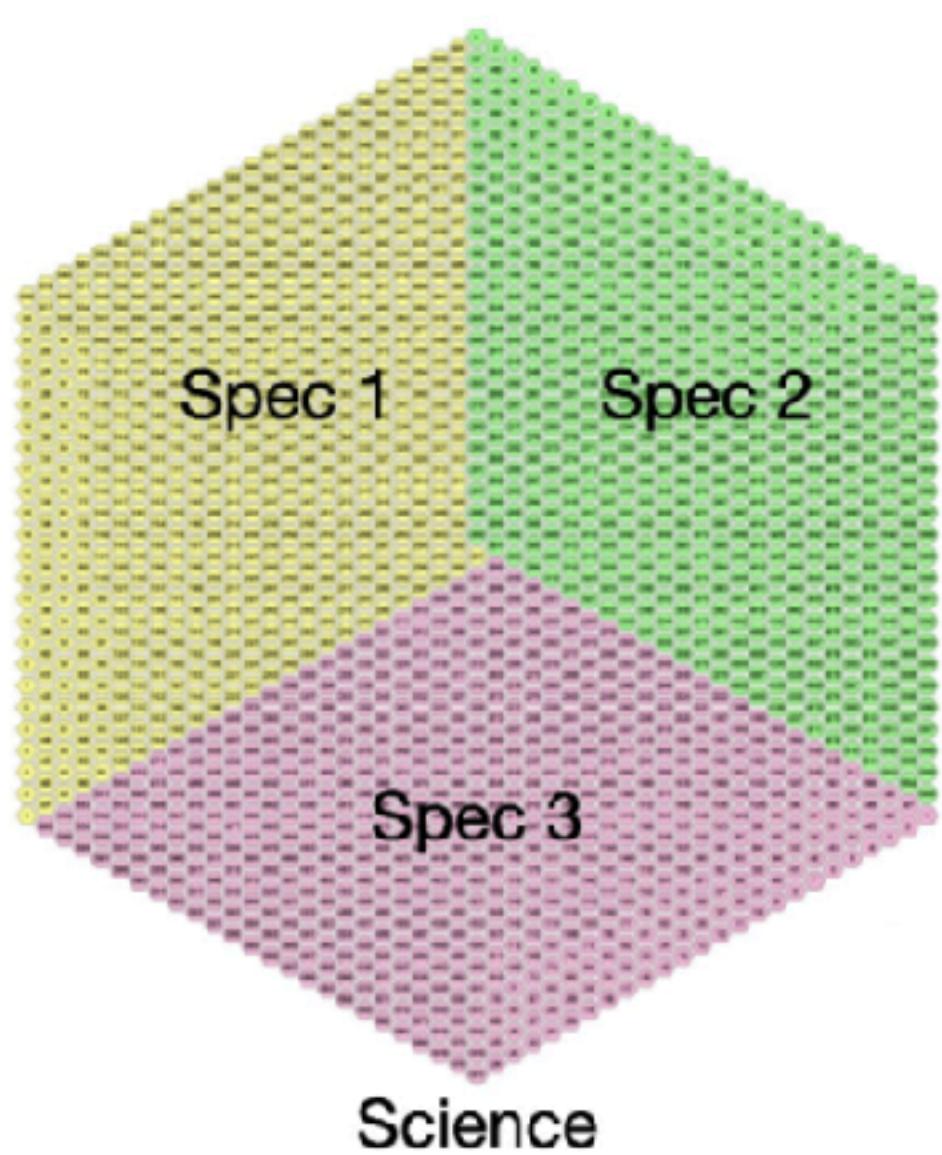




LVM Spectrographs

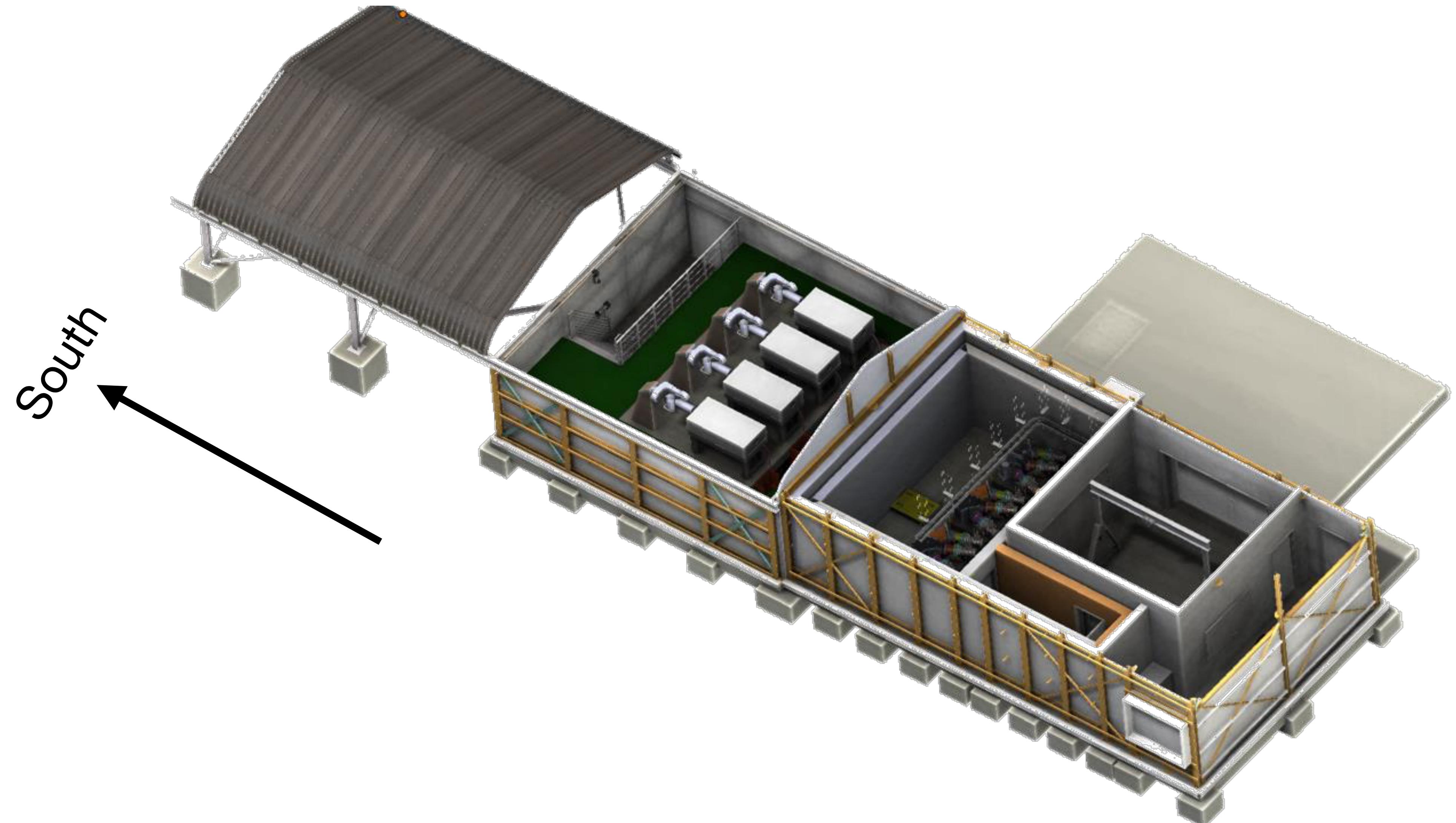
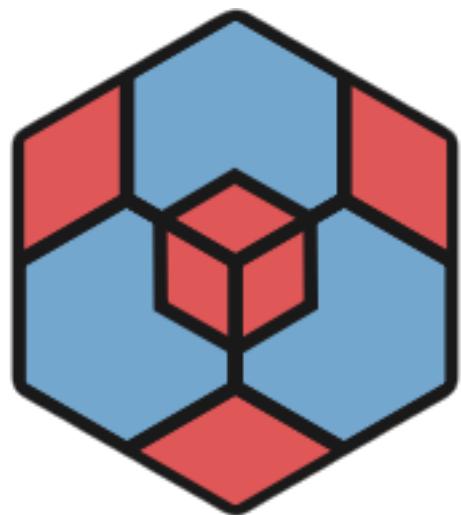


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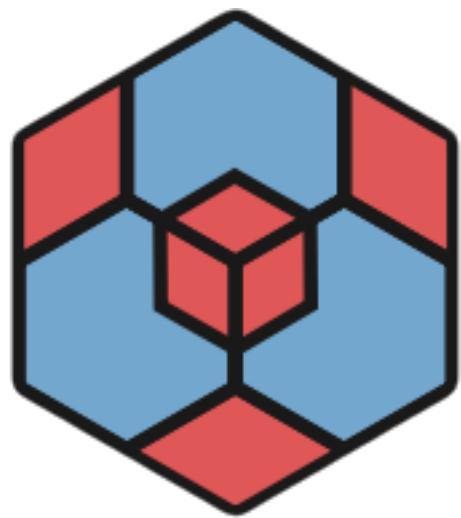


LVM Enclosure



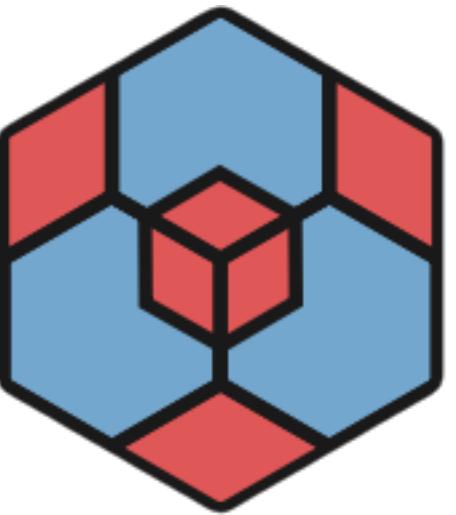


LVM Enclosure





LVM Enclosure



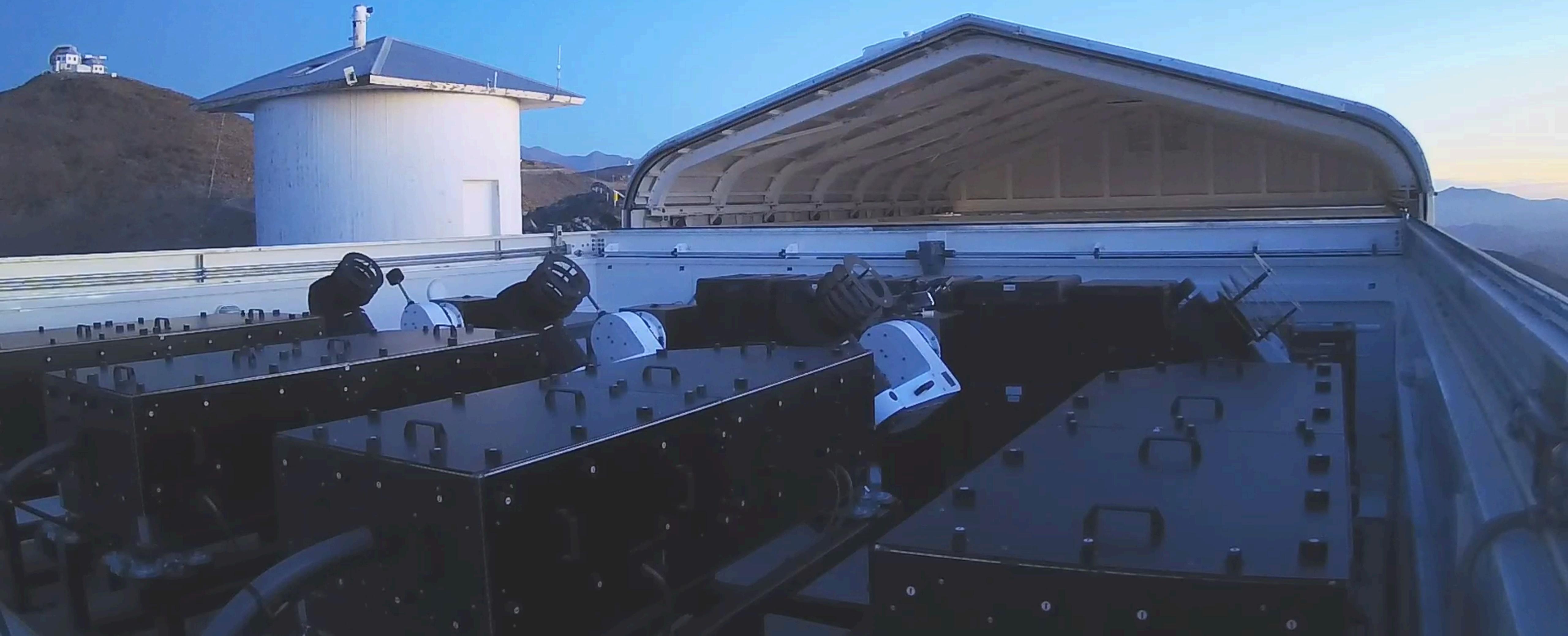
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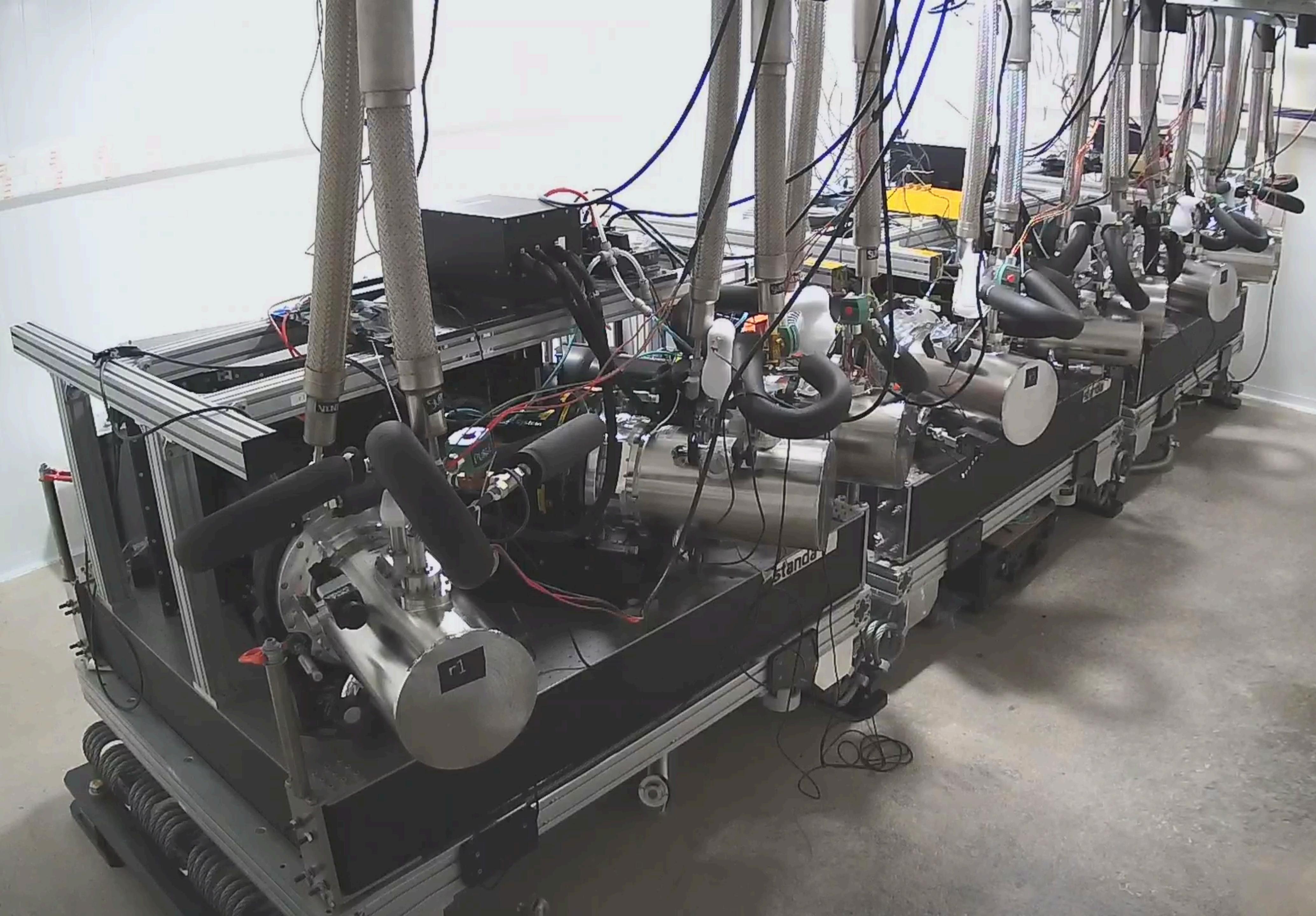


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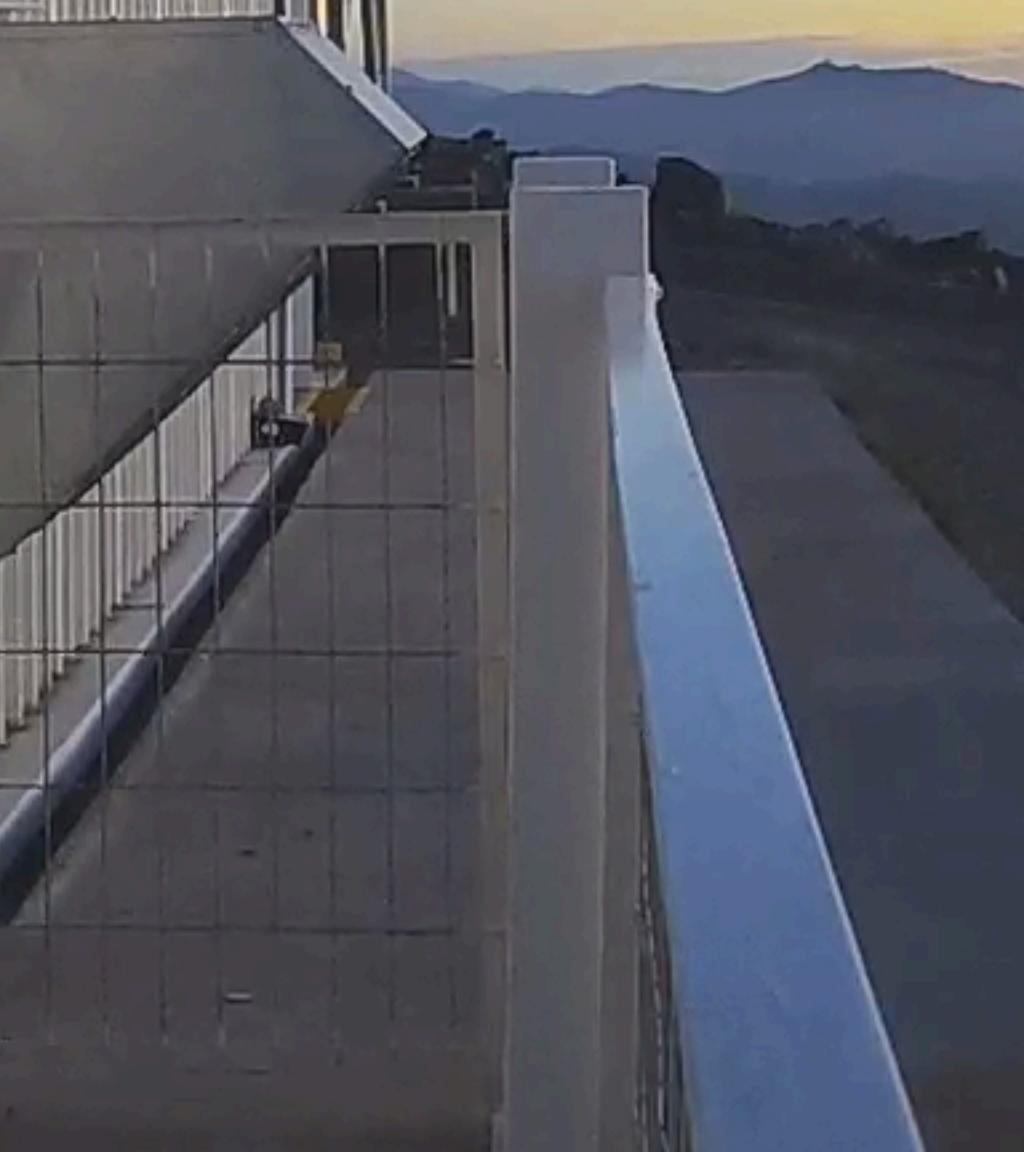




UniFi

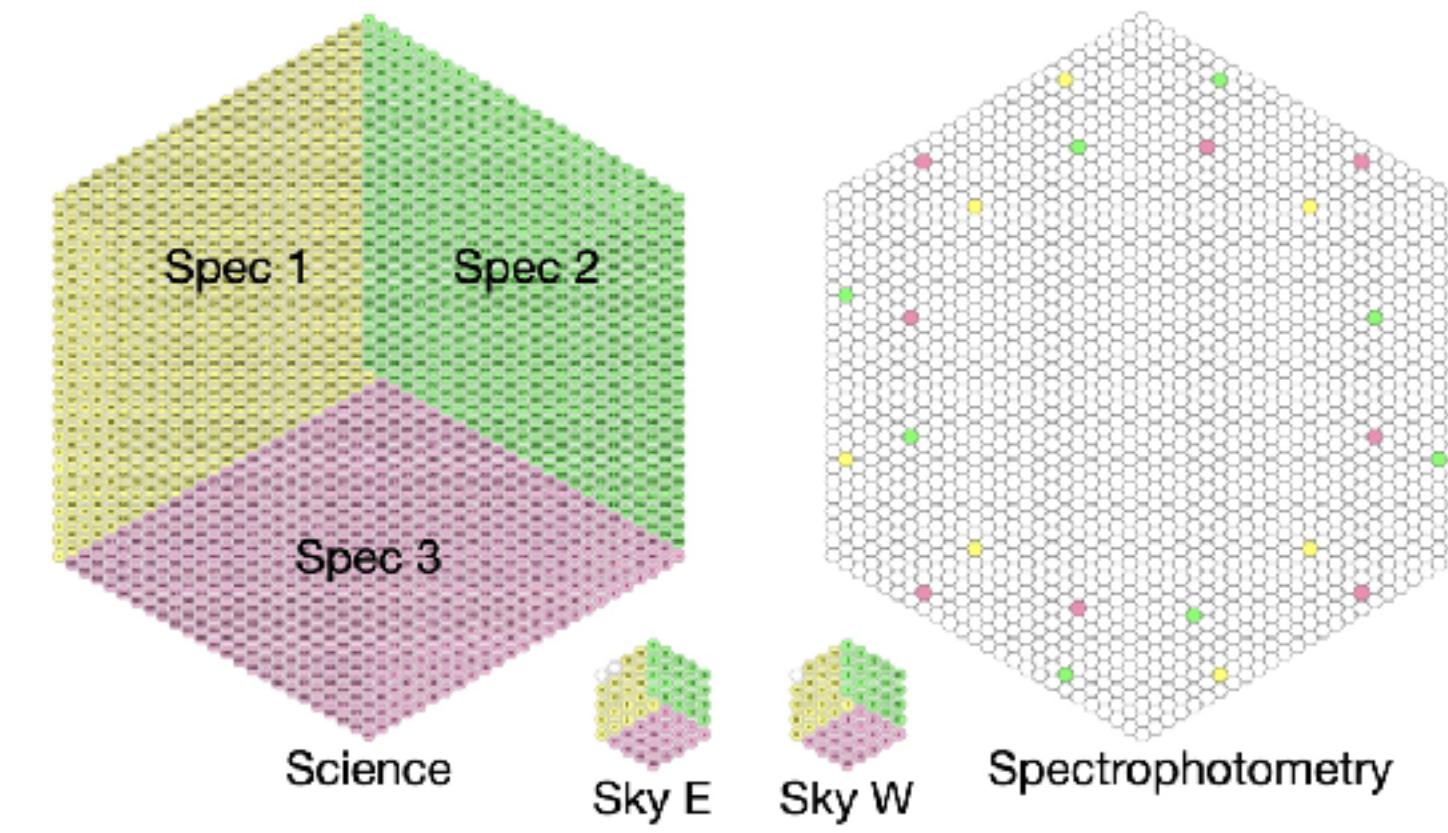
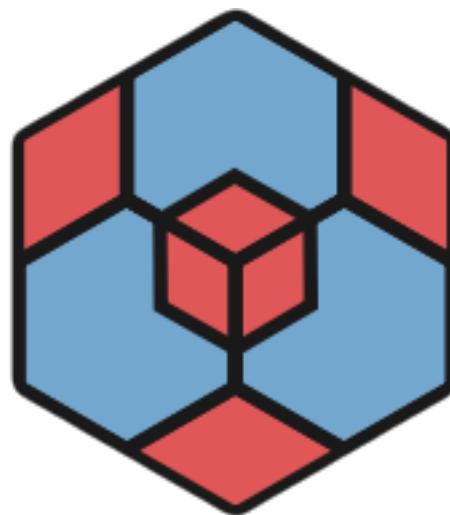


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Small Telescopes Big IFUs

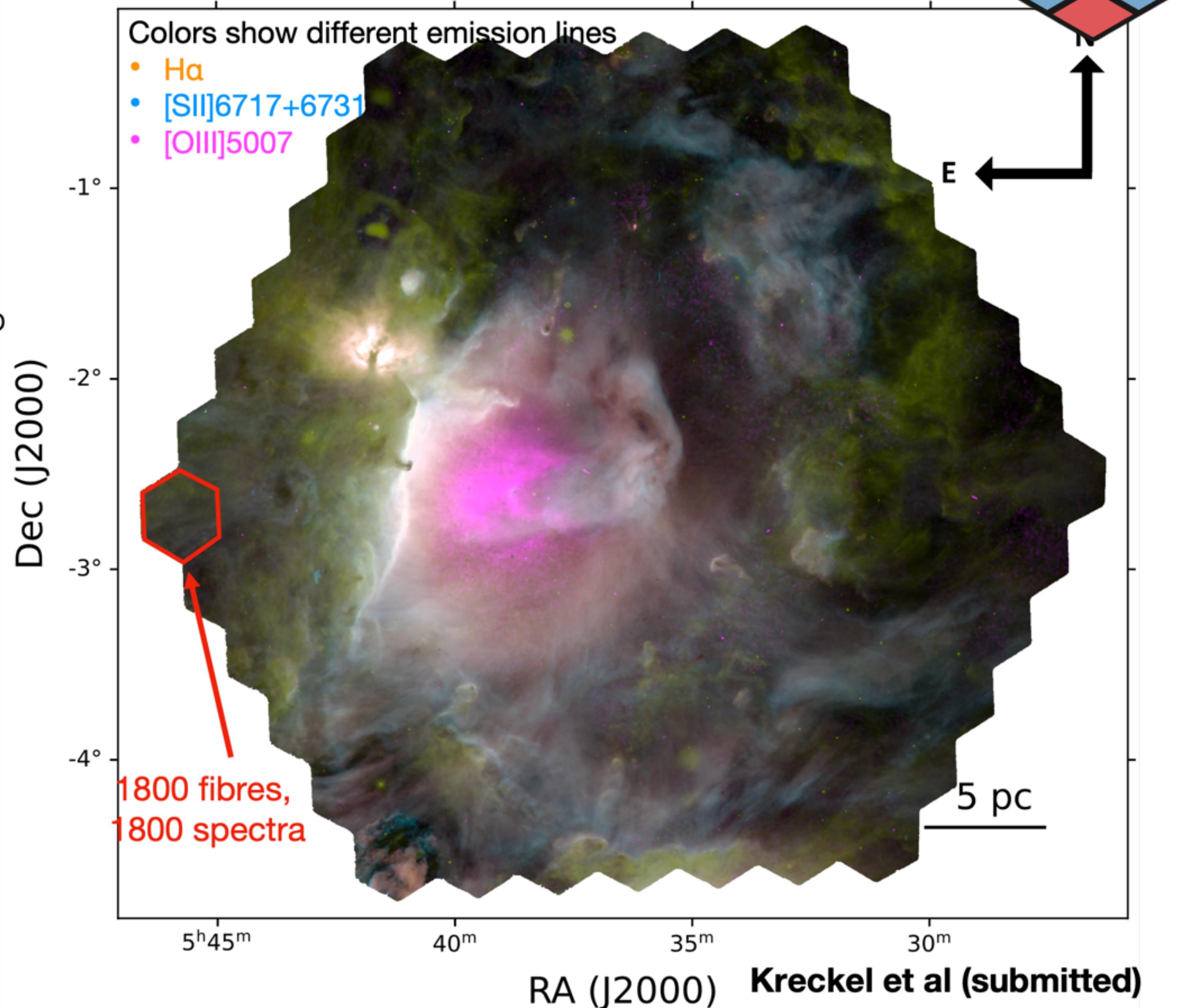
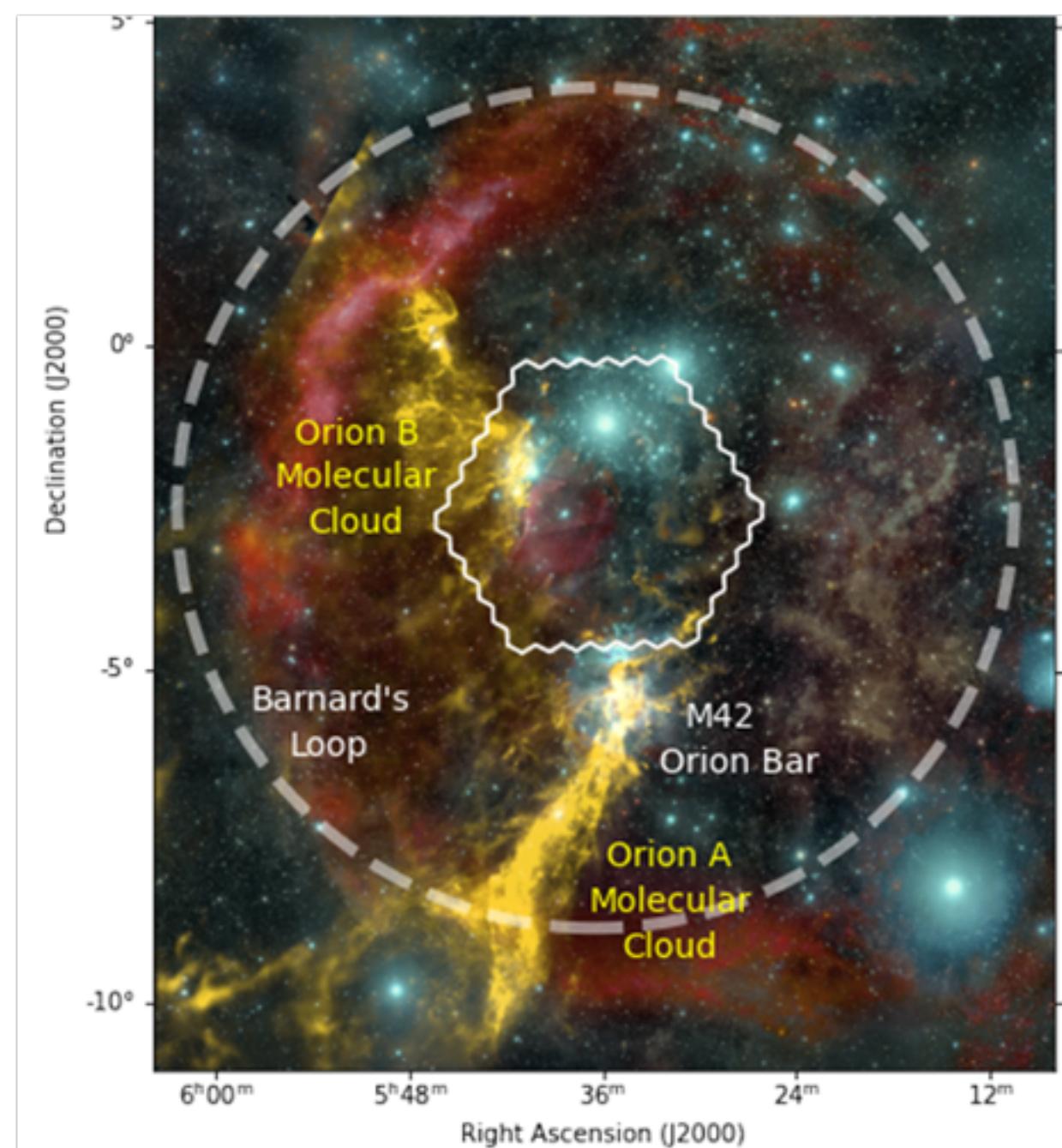




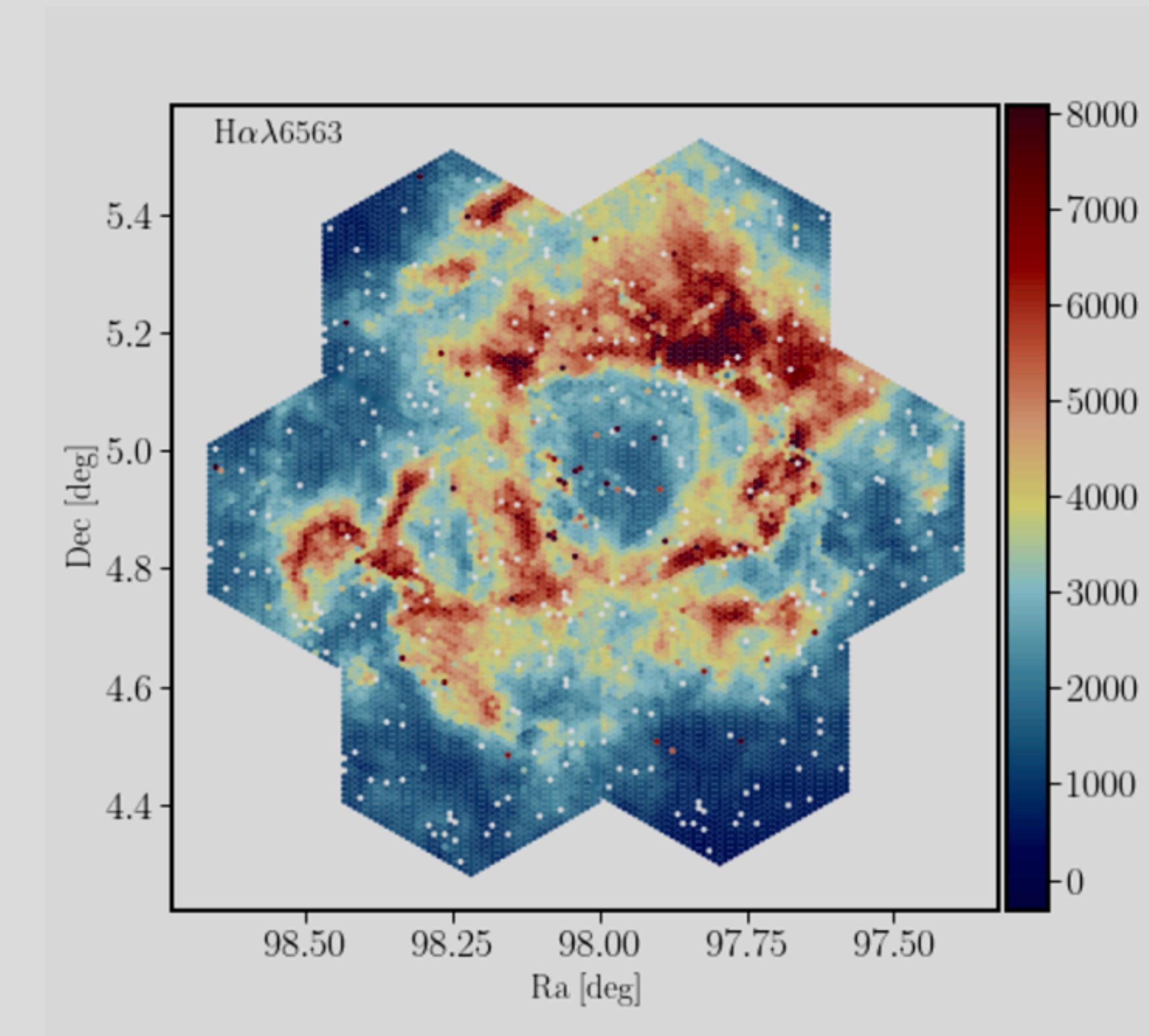
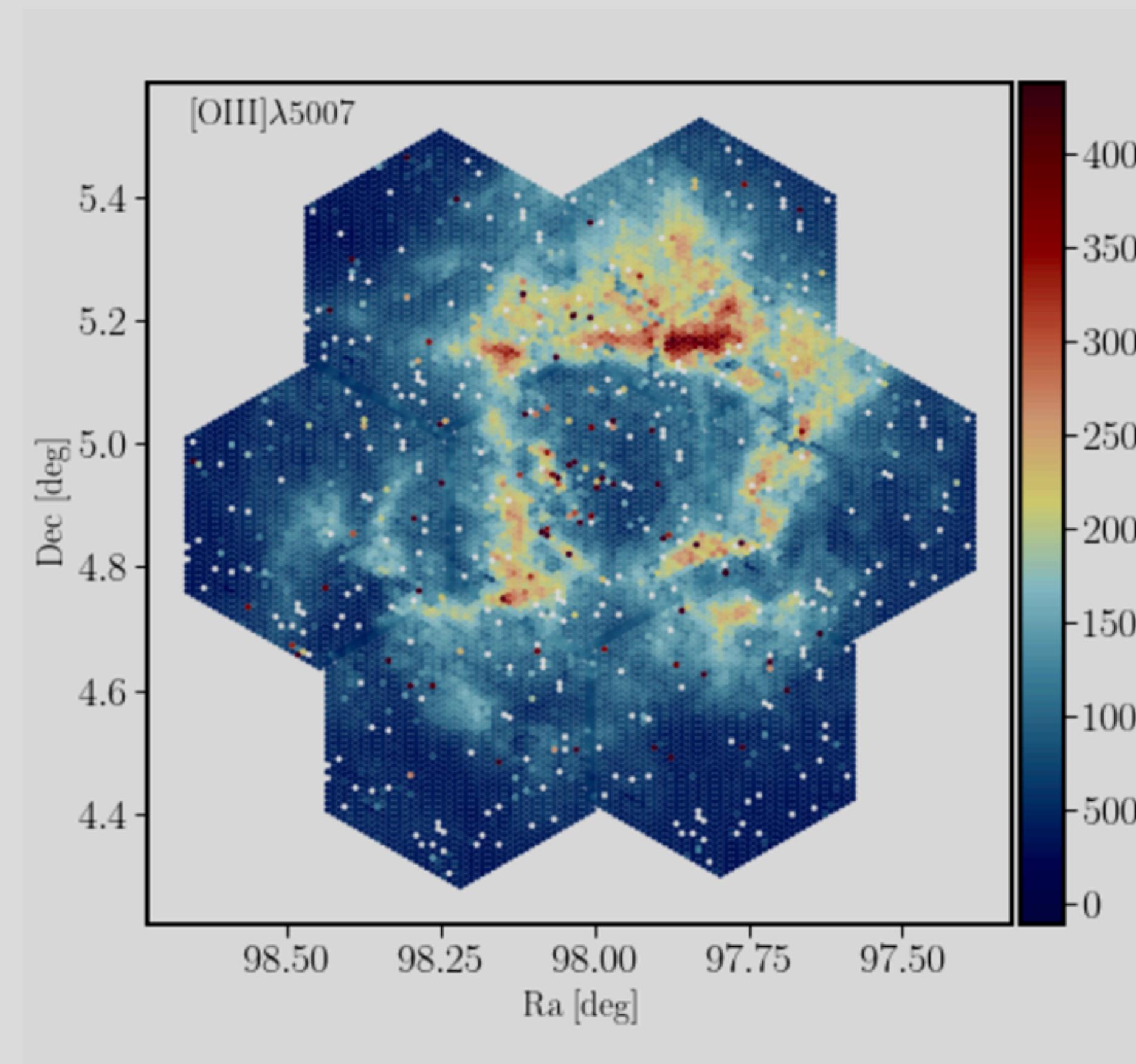
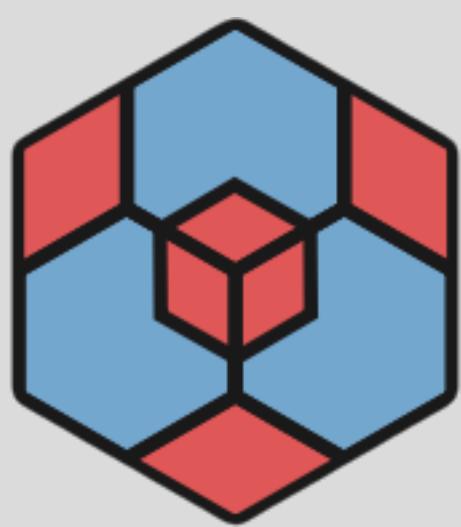
LVM MW Data

Orion Nebula

- First 108 tiles observed over 17 nights
- Radius $\sim 2^\circ$, final radius will be $\sim 6.5^\circ$



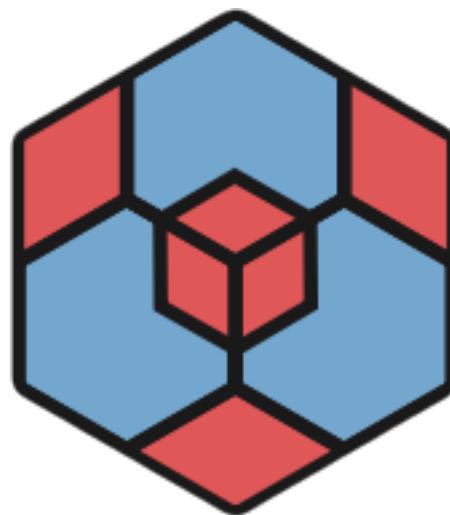
Kreckel et al (submitted)



Rosette Nebulae – Drory et al. 2024



Observing tools



Actors: servers that manage each one of the subsystems (you should not need to interact with them).

GORT: library to control the different subsystems.

Overwatcher: process that uses GORT to run robotic observations.

Ivm-web (AKA the web app): displays information from the Overwatcher and subsystems, night logs, GORT logs, etc.

Webcams: check the surroundings of the LVM enclosure.

Slack: used for communication and for automatic notifications from the Overwatcher.

Grafana: displays telemetry from different subsystems.

VNC / Ivm-observer: used to run observations manually from the LVM servers or to look at raw data.

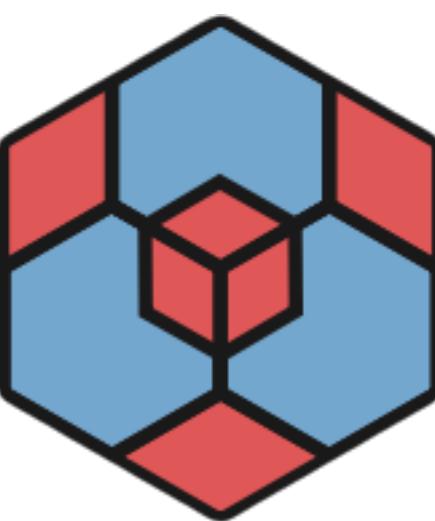
Ivm-operations: mailing list where a lot of observer-relevant conversations happen.

Zoom: a Zoom room that you can use while observing to talk to other observers.

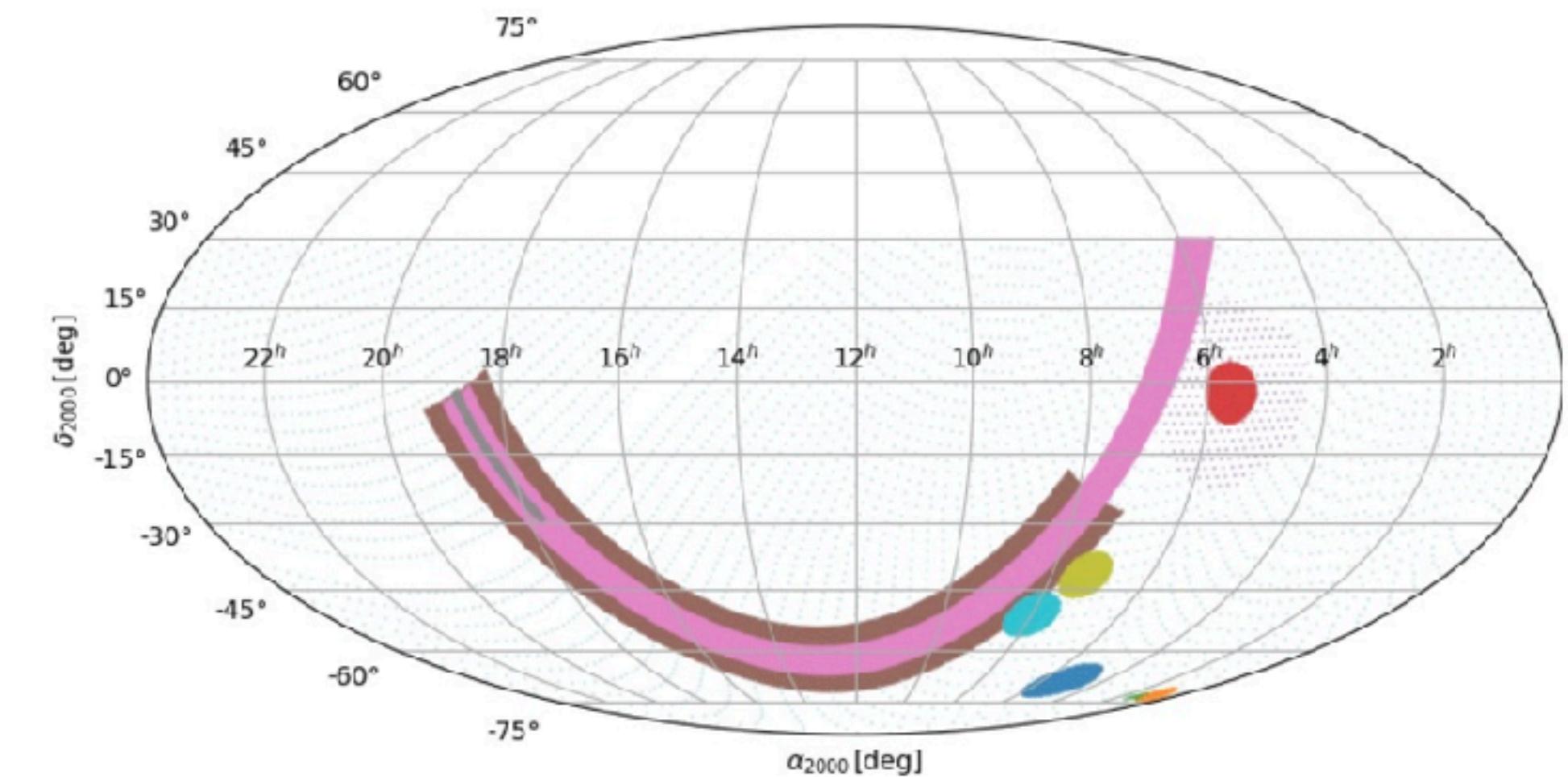
Wiki: internal SDSS-V wiki. You don't have access to this but if any documents there are relevant they will be shared with you.



Observing with LVM



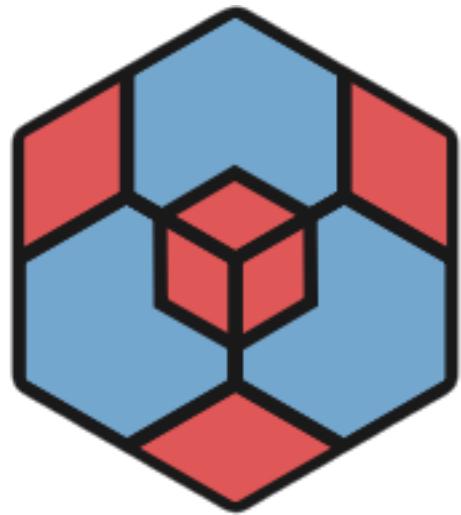
- Calibrations (start 15 minutes before sunset): twilight flats, quick cals, biases.
- Open dome for observing (5 minutes before twilight ends).
- Observing sequence:
 - Get next tile from the scheduler.
 - Focus telescopes (every ~1 hour)
 - Slew telescopes
 - Acquire fields
 - Expose (15 minutes) During readout
- Close the dome for end of night
- Send night log



Standards loop
Dithers



Getting ready for observing



- Generate and share SSH key. Add SSH configuration to `~/.ssh/config`
- Confirm that you can SSH to `lvm-observer`
- Confirm that you can VNC to the observer machine and see the webcams.
- Confirm that you can log in to `lvm-web`.
- Join the SDSS-V Slack workspace.
- Confirm that you have been added to the `lvm-operations` mailing list.
- Add your availability to Evelyn's observer schedule.