



COLIBRI

- Latest news -



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A transient universe

We are now entering the new era of Time Domain Science!

Main scientific domains:

- Accretion & explosion Physics.
- Stellar evolution.
- Galaxy and ISM evolution.
- Cosmology.
- Link to non-EM messengers.

Main difficulties of this hunt:

- Observations are always panchromatic: from high-energy to visible/IR and radio domains.
- Time response is the key: you have to go very fast!

Panorama in the next decade

All major « roadmap » have identified time domain astrophysics as a priority area:

- ESA Cosmic Vision (2005).
- Chinese Space and Technology Roadmap (Guo & Wu, 2010).
- European Union ASTRONET group (Bode et al., 2015).
- USA National Research Council Decadal Survey (2010).
- Many national reviews, including France.

The scale of transient science will be very different in the next decade:

- What will LSST find in the optical?
- What will SKA find in the radio?
- What will CTA find in the VHE?
- Etc.

Instrumental panorama in the next decade

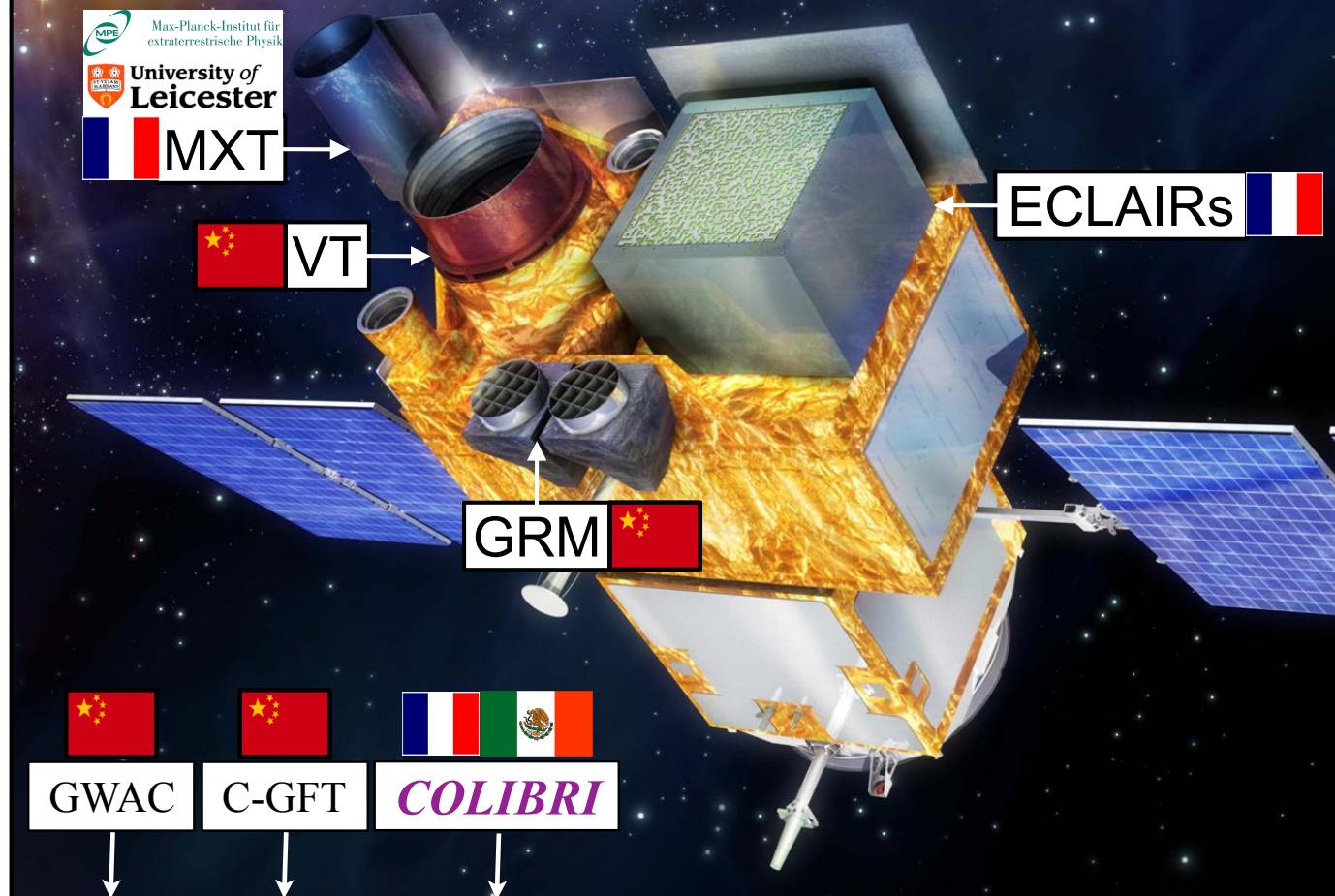
- Advanced GW detectors: LIGO, VIRGO, KAGRA, ...
- Space telescopes: Chandra, XMM, eROSITA, JWST, Euclid.
- Optical Time Domain Astronomy: Pan-STARRS, ZTF, LSST.
- Large radio/submm observatories: ALMA, SKA.
- Extremely Large Visible Telescopes: E-ELT, TMT.
- VHE Cherenkov arrays: CTA, HAWC.
- KM3 HE neutrino detectors: ICECUBE, KM3Net.
- GRB instrumentation: Fermi?, Theseus?

SVOM

=

Space-based multi-band astronomical Variable Objects Monitor

The sino-french SVOM mission



See B. Cordier talk...

A transient sky follow-up telescope!

COLIBRI plays a key role in the SVOM system (see A. Claret talk):

- To observe the early optical afterglow during the slew of the satellite.
- To provide fast accurate positions of faint and dark GRBs.
- To provide a fast redshift estimator to trigger instantly the largest facilities (VLT and NTT in particular).
- To complement the photometric follow-up of sources observed by SVOM during the General Program (between GRBs).

But it will be also interested in all the scientific questions addressed by the transient sky: identification of the GWs and neutrinos alerts, LSST follow-up, etc.

COLIBRI

A dedicated robotic telescope:

Delay between alert reception and start of an observation: <20 sec.

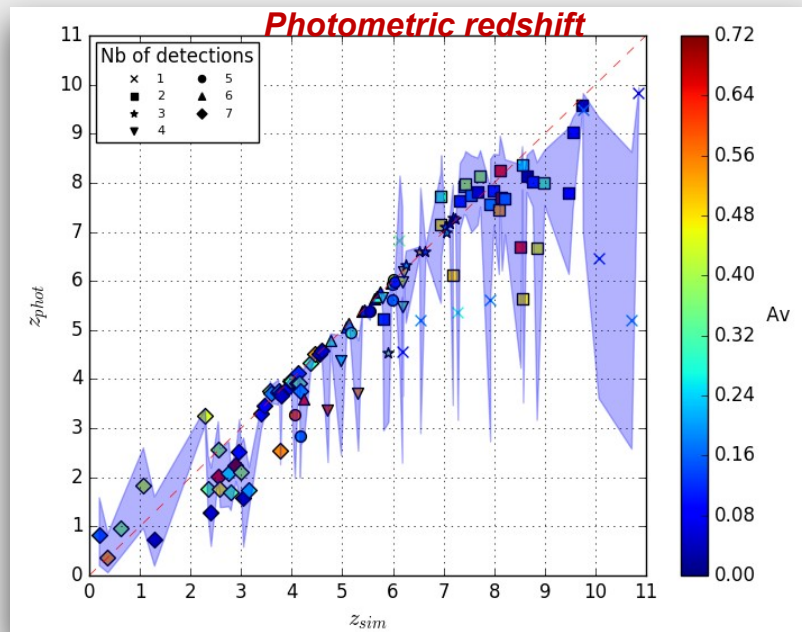
Primary mirror diameter: 1.3 m.

Two (probably three) simultaneous arms:

- Wide field of view: 26 arcmin.
- Visible domain: B to SDSS z bands.
- Infrared domain: up-to H band.

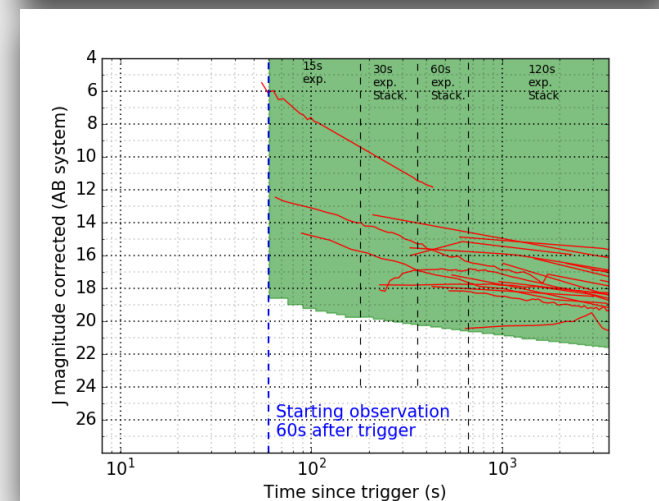
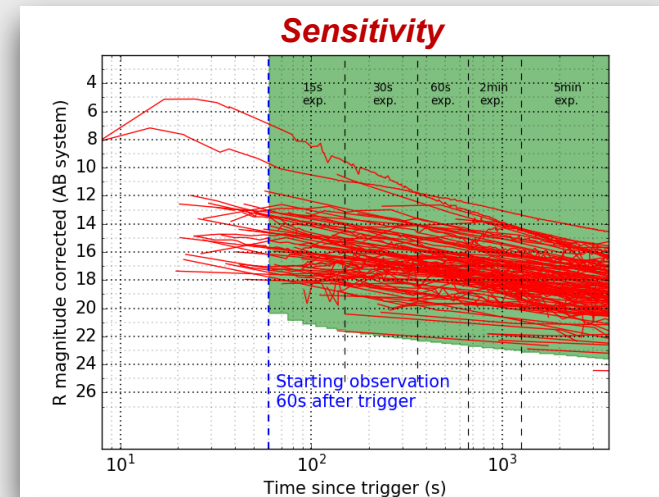


Scientific performances

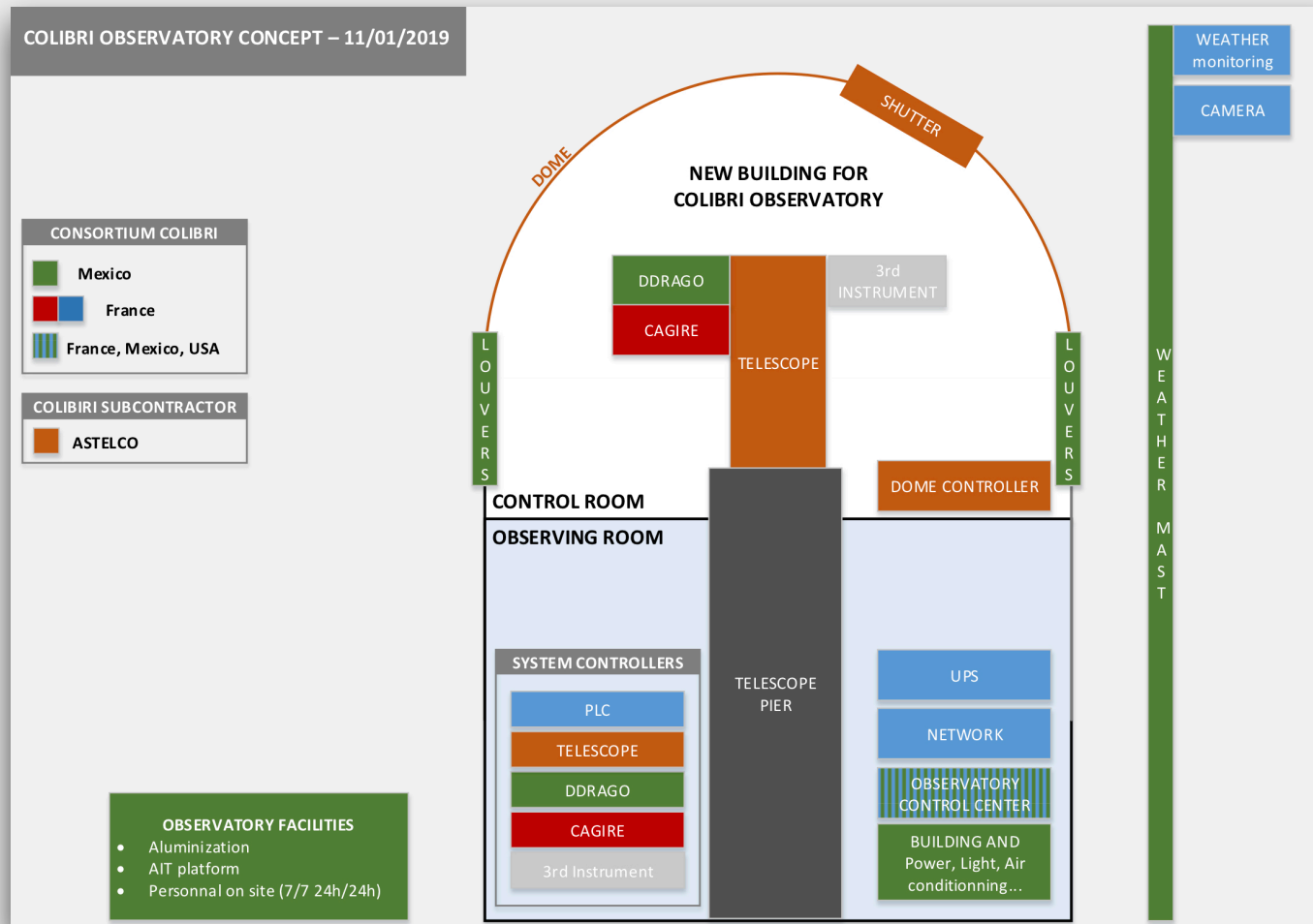


- ➔ Follow about 100% of the GRBs detected.
- ➔ Good redshift precision for $3 < z < 7.5$.

See D. Corre talk...



A complete system



Institutional partners

OCEVU/AMU plays a key role in this project by funding the telescope and a part of the human resources.

INSU/CNRS identified the project as one of its *P0* at the latest Colloque de Prospective (Giens, 2013). It funds part of the developments (through CSAA) and provides a part of the human resources.

CNES funds the developments on the near-infrared camera (CAGIRE).

FOCUS/UGA provides the near-infrared sensor for CAGIRE (SOFRADIR development).

CONACyT and **UNAM** funds a part of the developments (optical camera, beam splitter and infrastructure at OAN) and provides the human resources.

MoU

Memorandum of Understanding (MoU) now officially signed:

- Official agreement between France and Mexico for the scientific development and the exploitation of COLIBRI.
- Board composed of AMU, CNRS and CNES for France, UNAM and CONACyT in Mexico.
- Time sharing: 10% to the observatory, 45% to the project and 45% to the French and Mexican scientific communities (through a national call for proposal).

➡ 9th of October 2019: first Board meeting.

Main key dates

A very dense schedule:

- **Start of the project: mid-2015.**
- Official order of the telescope by AMU (for OCEVU): July 2016.
- AITs/AIVs of the telescope and the visible arm at OHP: June 2019 to February 2020.
- Transportation and installation at Mexico: Spring 2020.
- **Start of the scientific observations: Summer 2020 (TBC).**

Observatorio Astronómico Nacional in San Pedro Martir

A very nice astronomical site:

- Median seeing: about 0.8 arcsec.
- About 80% of observable night (60% photometric).
- Located in a protected national park.



View from the site



Official groundbreaking

- May 2018 -

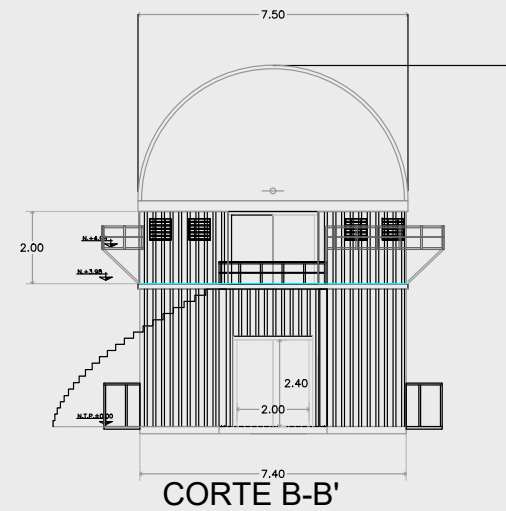
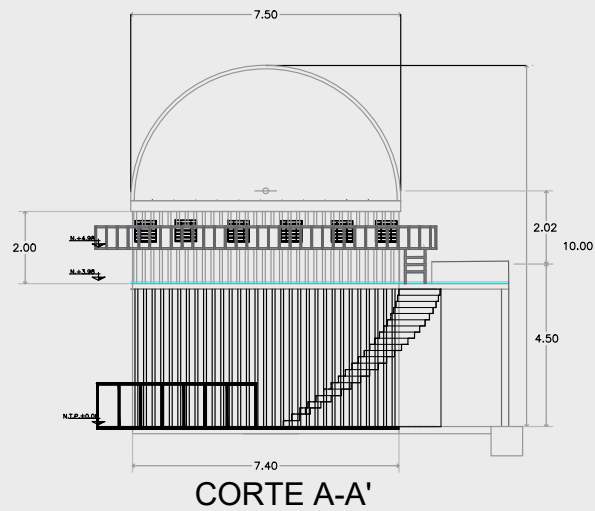


An official name was given on
this occasion:

COLIBRI



Building at OAN



Building at OAN

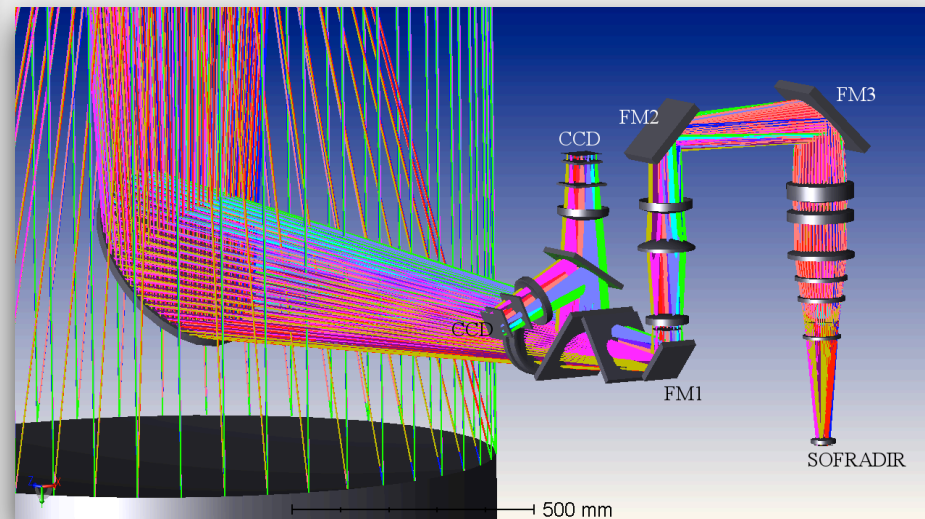
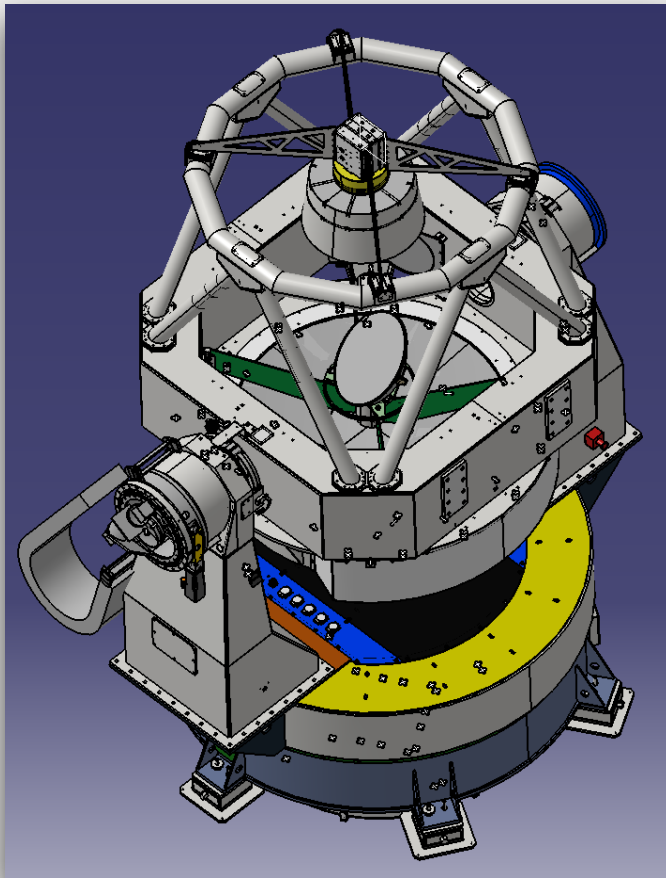
- November 2018 to May 2019 -



Pouring of the pillar - May 2019 -



Telescope and instrument design

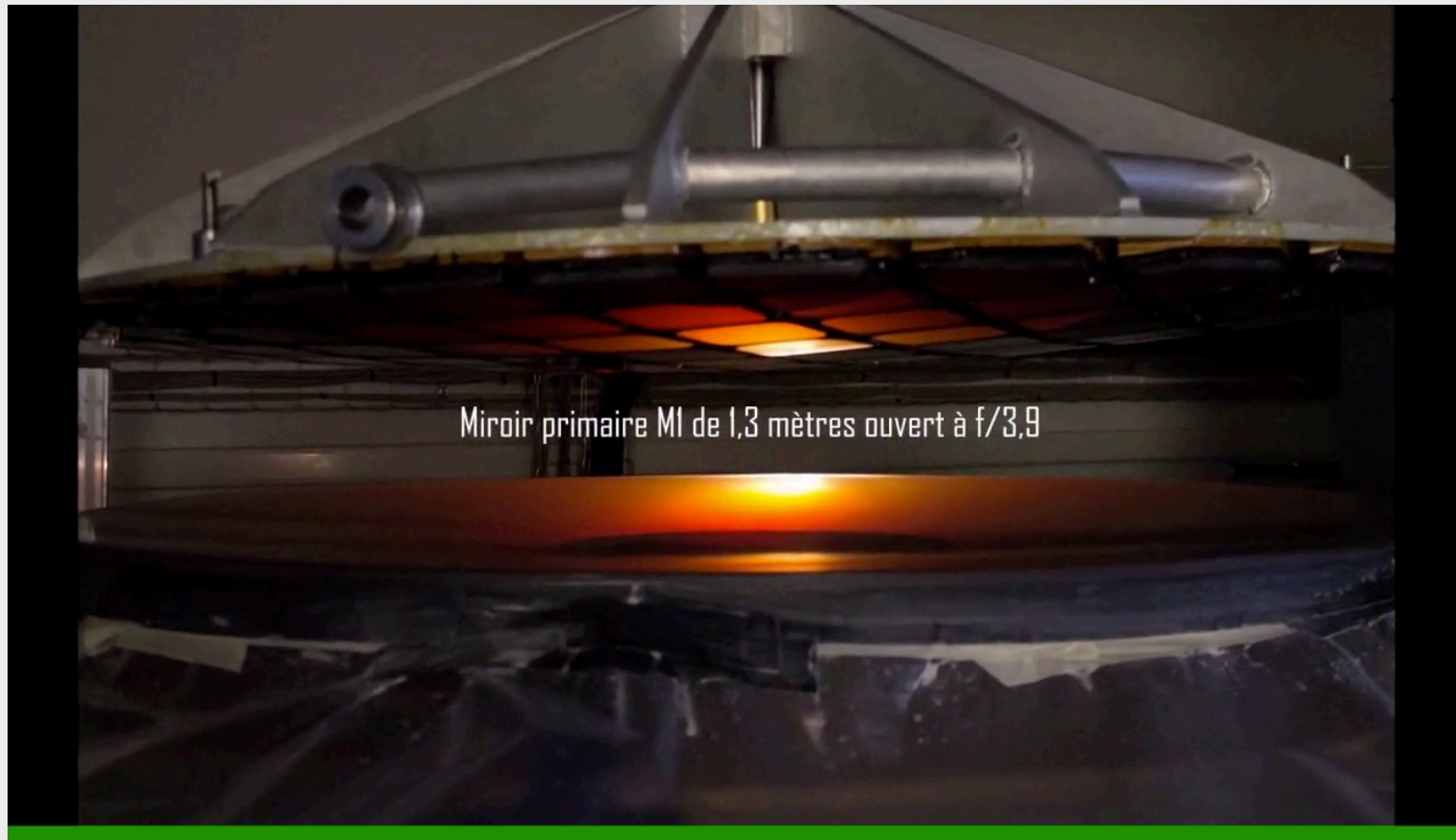




Telescope is coming...

**Factory Acceptance of the Telescope in
Munich successful: May 2019.**

Polishing of the main mirrors



Main next dates

A very dense schedule:

- Factory acceptance of the dome/the telescope: 13th and 14th of June 2019.
- Arrival of the telescope at OHP: 17th of June 2019.
- TRR: 25th and 26th of September 2019 (TBC).
- AITs/AIVs of the telescope and the visible arm at OHP: June 2019 to February 2020.
- Transportation and installation at Mexico: Spring 2020.
- **Start of the scientific observations: Summer 2020 (TBC).**

Conclusion

The project is progressing at a steady pace with a limited delay so far.

2019 will be a very important year with the reception of the telescope, its AITs/AIVs in France and the construction of the building in Mexico.

Scientific observations might start in 2020:

- *The LIA is here to prepare us for the scientific exploitation of Colibri, but not only....*
- *All the scientists should not hesitate to propose observations: the project is open to all proposals (it is not a private telescope!).*

