Feedback from the PRISM proposal

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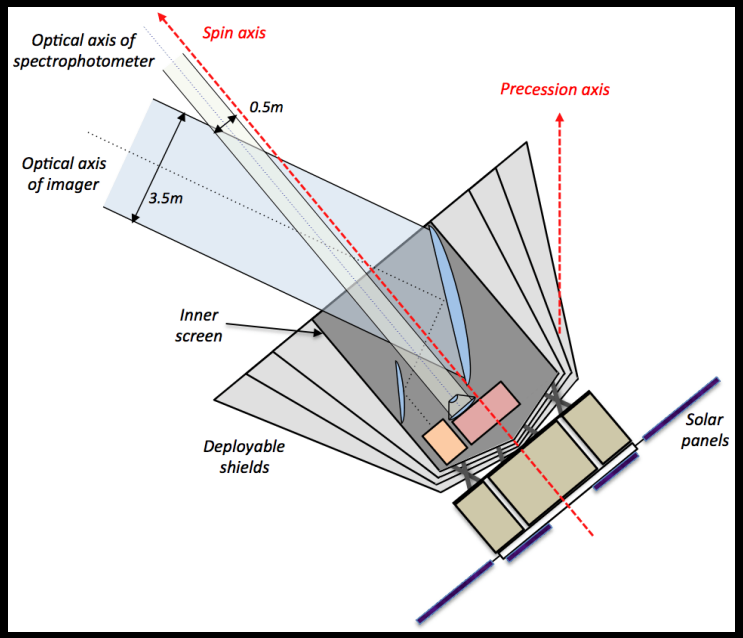


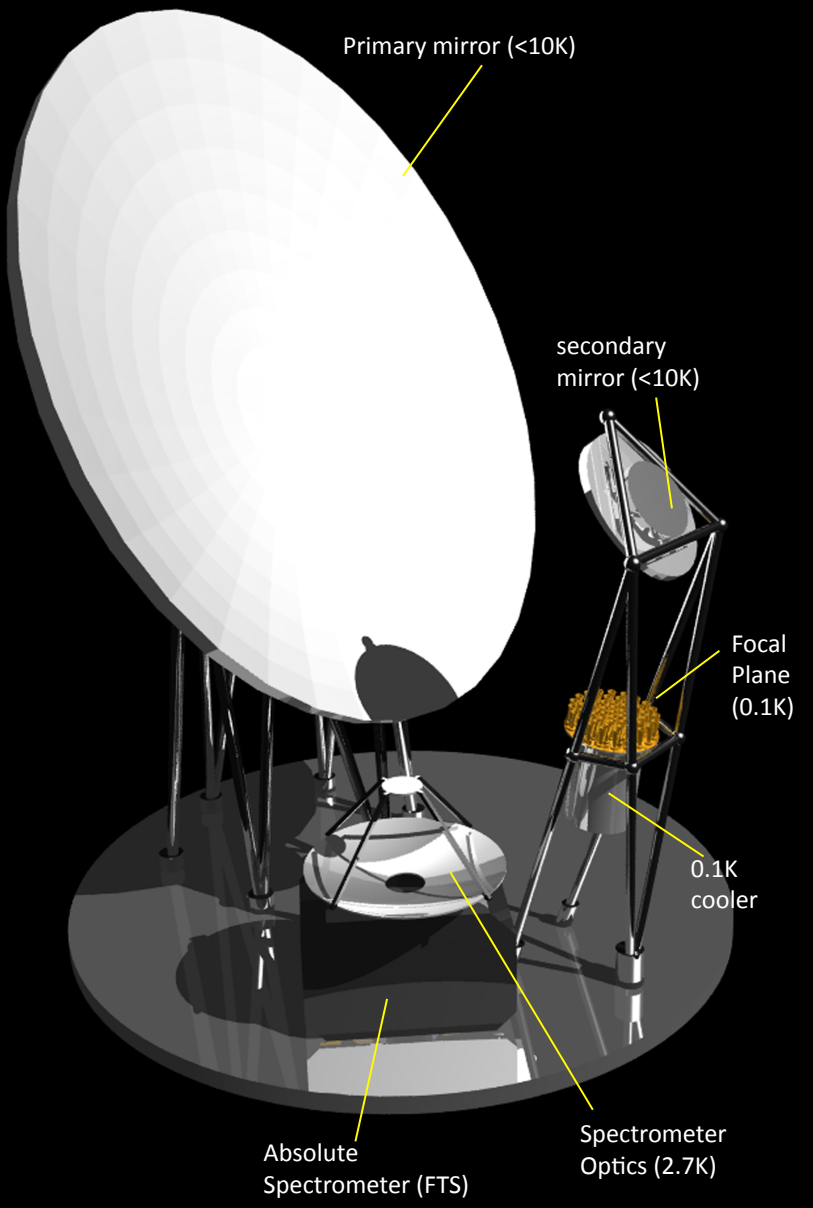
Two instruments

Imager: from 30 GHz to **6 THz**
≈30 broad-band channels
many narrow-band channels
3.5 m mirror at **T<10K**

Absolute spectrophotometer

Ancillary spacecraft for calibration

Ariane V launch



PRISM – feedback

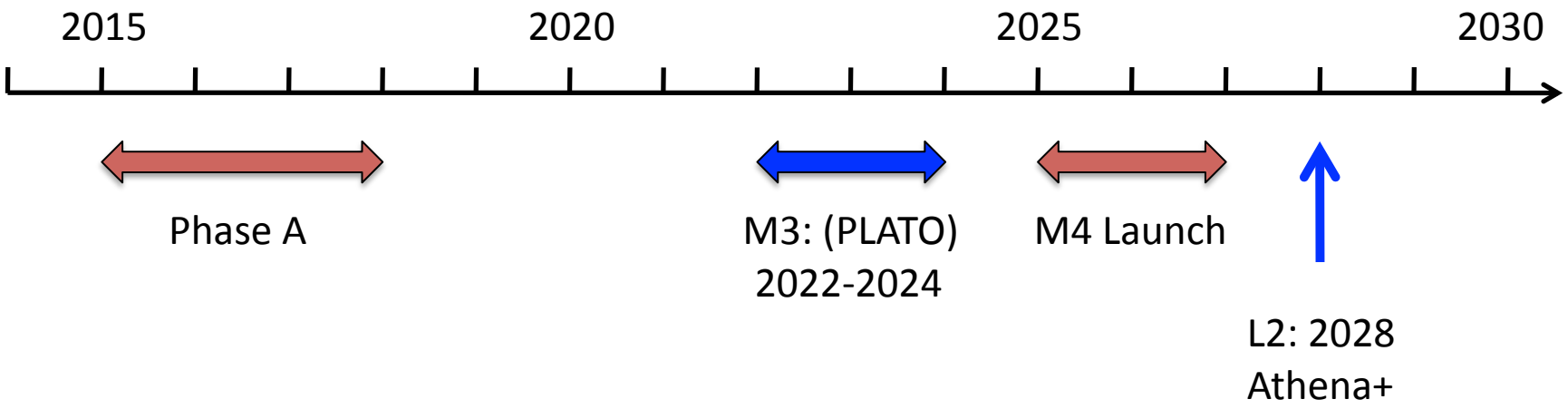
- From the scientific community:
  - Strong support worldwide (more than 600 supporters from more than 30 countries)
- From the SSC:
  - TOP 5 – one out of 5 pre-selected proposals invited to an additional interview
- Not selected utimately… why ?

PRISM… is a cooled 3.5 m mirror, with a precision-calibrated spectrophotometer and very large detector arrays. Such a mission is the 'ultimate' CMB experiment addressing **inflation** through B-mode polarization, **and recombination science** through precision spectroscopy. **The SSC considered these CMB science goals as extremely important and fundamental, and it is clear that, after what is being achieved with Planck, a space mission is needed to successfully address them**. In comparison, while **the science cases addressing clusters, high-z galaxy formation and the Galactic ISM are important and of substantial interest**, especially the studies of the galactic magnetic field, **by themselves they do not justify an L mission 20 years from now**... Yet, it is the non-CMB science that is the technology and cost driver for the proposed mission, especially in terms of the **size and temperature of the telescope**. **The core CMB science can in principle be carried out with a smaller space mission (which could thus be implemented on a different, faster implementation path)**. Given the very active ongoing activities in CMB studies by the worldwide scientific community, it's not impossible for the CMB science goals of a PRISM-like mission implemented in either L2 or L3 (thus 15 or more years in the future) to be undercut by a smaller (M mission scale) mission focused on CMB science only. In summary, **the ESA SSC was fully convinced of the great importance of the core CMB science and encourages the CMB community to consider proposing this science for a future M-class mission.** The SSC did not see that an L mission is needed for the CMB science, nor justified in itself by the other science goals presented.

Interpretation & consequences

- SSC convinced that there should be a next-generation CMB mission
- Non-CMB science welcome but cannot be a driver for the cost
- Descoping
  - ***No active cooling of the mirror***
  - ***Reduce the frequency range***
  - ***Reduce the telescope size***
  - ***Soyuz launch***

Calendar


2015
2020
2025
2030
Phase A
M3: (PLATO)
2022-2024
M4 Launch
L2: 2028
Athena+

Still TBD

- High resolution mission (2-2.5m primary)?
- Absolute spectrophotometer?
- Ancillary spacecraft for calibration?