



# XRCF Mirror Calibration updates

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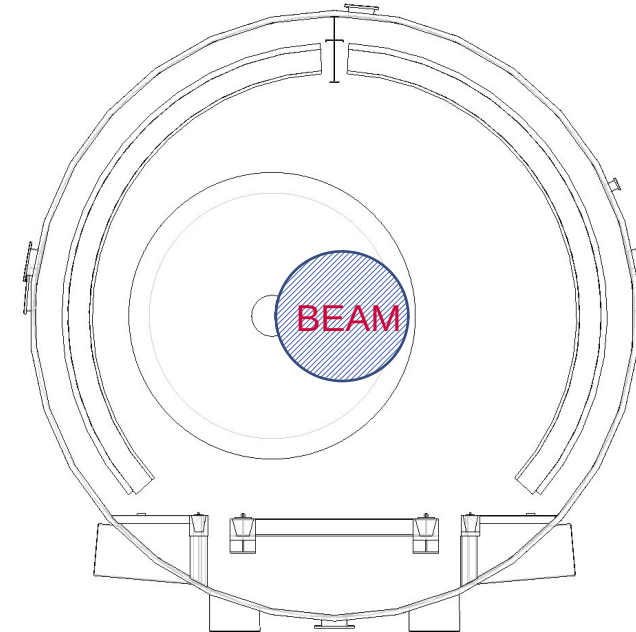
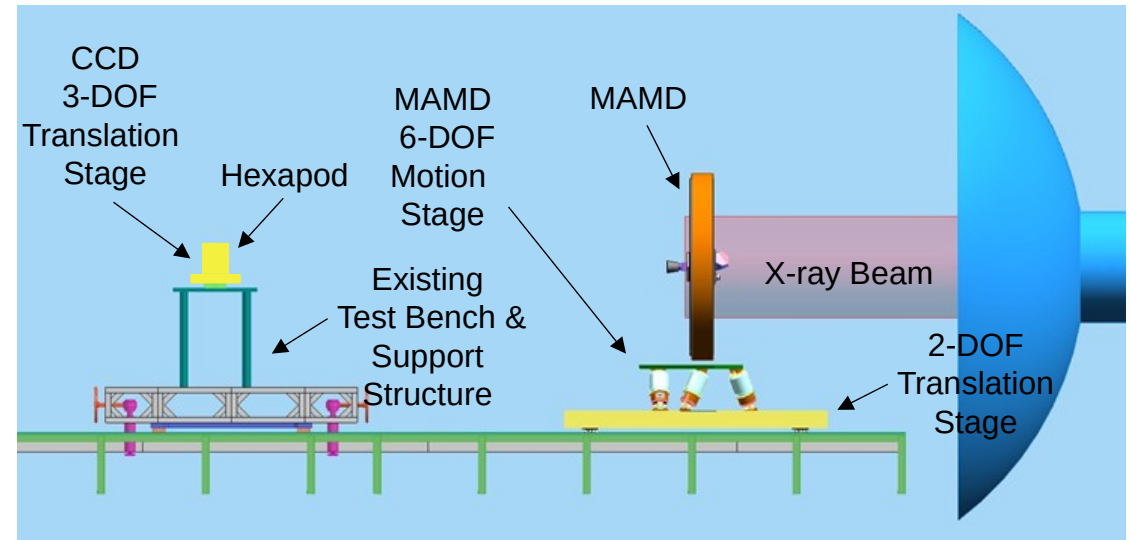
GSFC / CRESST

NAST meeting

February 12, 2021



# XRCF – X-ray & Cryogenic Facility





# XRCF contribution

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- MAMD (Mirror Assembly Module Demonstrator)
  - ~~2 MAMD test articles pre- and post-environmental test (2 Primes)~~
  - 1 MAMD prime selected
    - MAMD: **no earlier than mid 2023 (about 9-12 months after MAR)**
- QM
  - Performance verification campaign tests for the MA QM
  - QM verification (3 months) – **no earlier than 2025**
- FM
  - Perform the calibration campaign for the MA FM
  - FM calibration (6 months) – **no earlier than 2029**





# MAMD testing goals

## The MAMD is the EM of the MAM

As an EM, the goals of the MAMD are to enable the verification of the critical functions:

- 1.The ability to manufacture a full-sized Mirror Structure compatible with the ATHENA Mission Requirements and the ATHENA Reference Telescope Design
- 2.The ability to accommodate the MMs (SPO mirror modules)
- 3.The assurance that the materials and processes envisaged for the manufacture have the required maturity and quality
- 4.The ability to provide environments for the MMs that are within the specified range for all mission phases
- 5.The **ability to align MMs along the aperture** with the required accuracy
- 6.The **ability to retain MM alignment** under structural environmental loads



# MAMD campaign



XRCF

Pre-environmental test



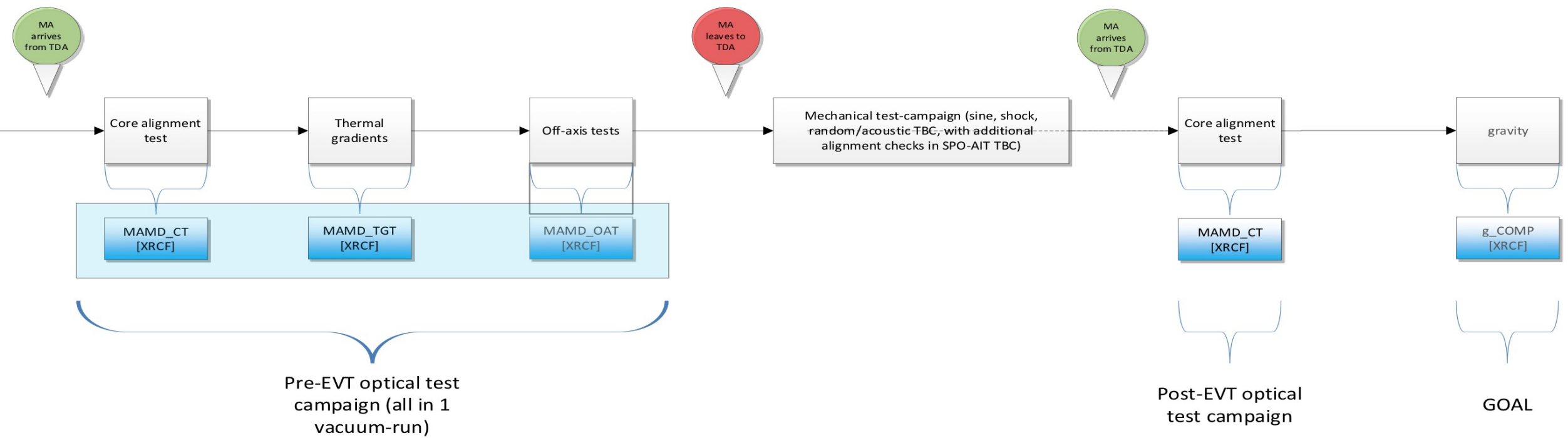
Europe

Mechanical & Environmental tests



XRCF

Pre-environmental test



# Current activity

- Refinement of the test requirement
- MSFC are back on side and commencing facility upgrade
  - Upgrades to the data acquisition system underway
  - New SSD (AMTEC) beam monitors received
  - Review of the Chandra alignment system
  - X-ray source and beam monitor check in May
  - Possible X-ray test of an SPO late 2021
- Design activity
  - MGSE design with MPE
    - advanced
  - Metrology design
    - Just started
  - Shutter design
    - Just started

