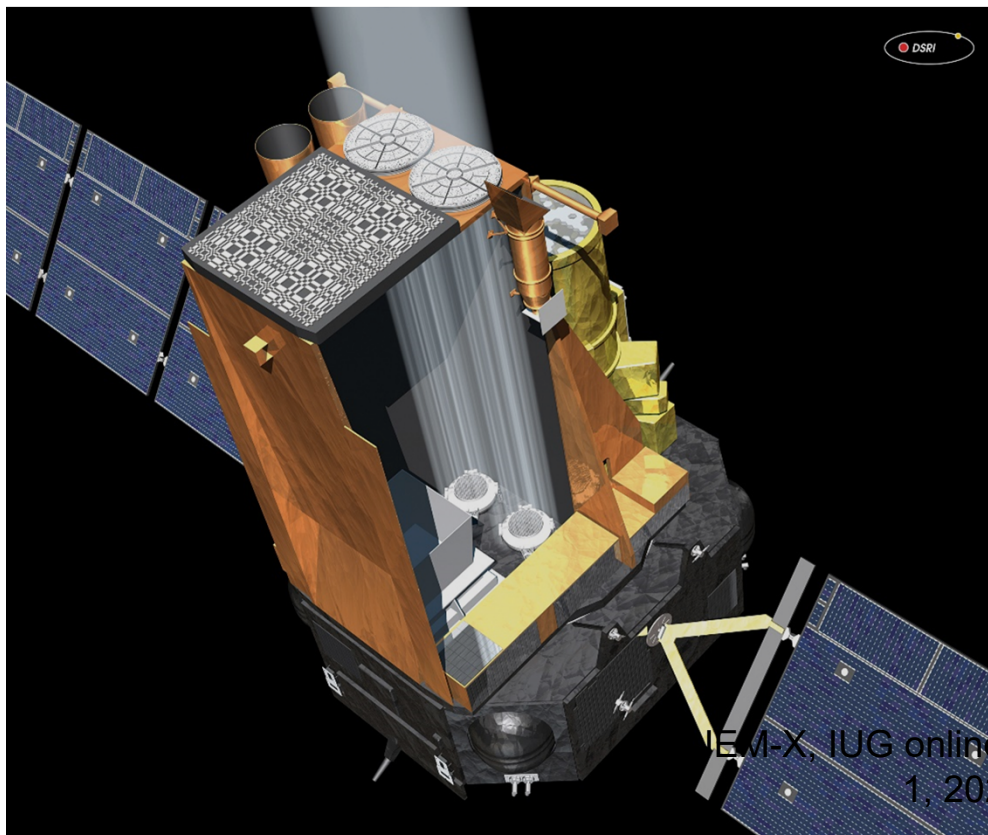


# Technical University of Denmark



## JEM-X Status, December 2021

Søren Brandt



JEM-X, IUG online meeting, Dec  
1, 2021

**DTU Space**  
National Space Institute

# Anode status

- So far – was on average ~2-3% loss per year (256 anodes in total), but now ~0% per year
- JEM-X1
  - 67 of 256 anodes affected (~25% of area)
    - 35 dead (4 pre-launch, 1 lost during 2010, 2 lost during 2011, 0 lost since 2012)
    - 12 neighbor anodes affected
    - 20 unstable or low
- JEM-X2
  - 67 of 256 anodes affected (almost 25% of area)
    - 30 dead (9 pre-launch)
    - 16 neighbor anodes affected
    - 21 unstable or low

No anode loss since 2011

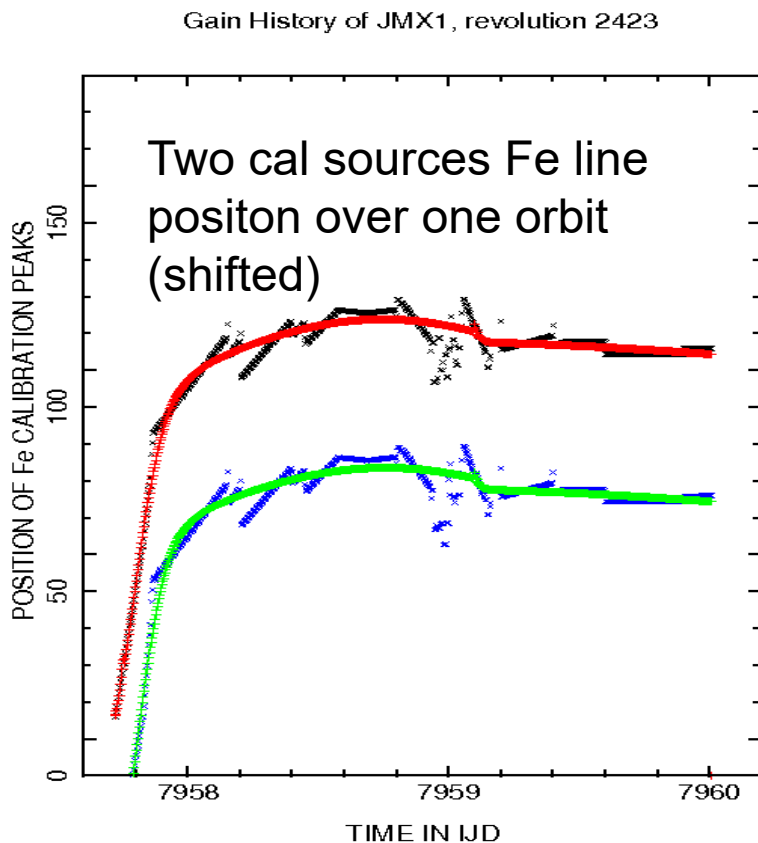
A few more characterized as weak

# JEM-X Gain Calibration in OSA

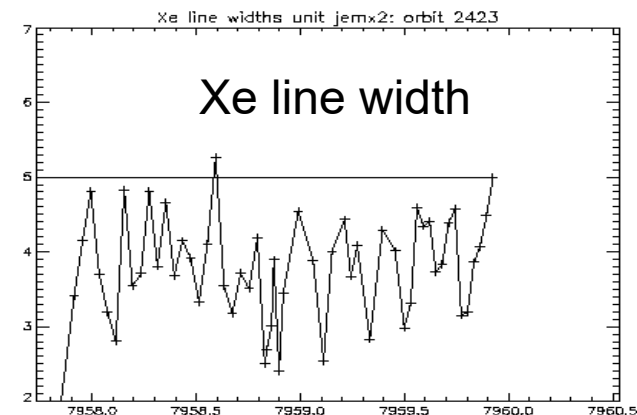
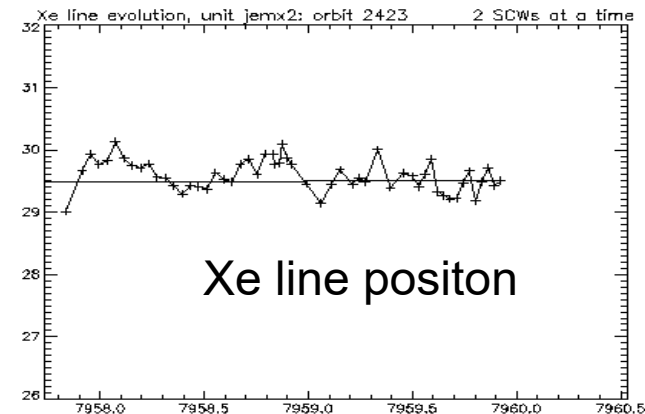
- Gain calibration requires continued efforts because of the decaying calibration sources
  - Further complicated by increased dependence on temperature = more variation over an orbit
- Calibration data must be collected in increasing time periods
- offline analysis of gain required to ensure correct results
  - However, usually automatic near-real time corrections are not too bad
- Calibration analysis is more difficult in orbits with grey filter
- Calibration provided by “Instrument Characteristics” tables delivered to ISDC for each revolution
- Eventually the gain calibration will rely only on the Xe fluorescence background line at 29.6 keV and temperature variation modeling

# JEM-X gain monitoring

- Gain tracking with Fe source (in JEM-X1) and Xe internal lines in both units



oxborow 11-Nov-2021 16:34



# Conclusion

- JEM-X is running smoothly
  - JEM-X was activated smoothly after INTEGRAL anomaly
  - Some support from original onboard SW developer was called upon for verifications
  - Some issues in OSA JEM-X light curve tool are being worked on
- Team is still intact – but also busy with other projects or on emeritus status
  - Ph.D. project on X-ray burst catalog finished in 2021
  - Postdoc (partly financed by ESA) working on calibration + science
  - Master and Bachelor student working on data analysis projects
- We expect JEM-X and INTEGRAL to operate in 2021-2022, as well as a potential extension for 2023-25 and beyond
  - Current calibration procedures expected to be until the ultimate end of mission
  - Performance is monitored to ensure that running both units will not endanger the future use