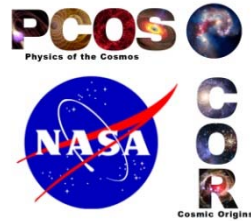


Development of Digital Micro-Mirror Device Arrays for Use in Future Space Missions

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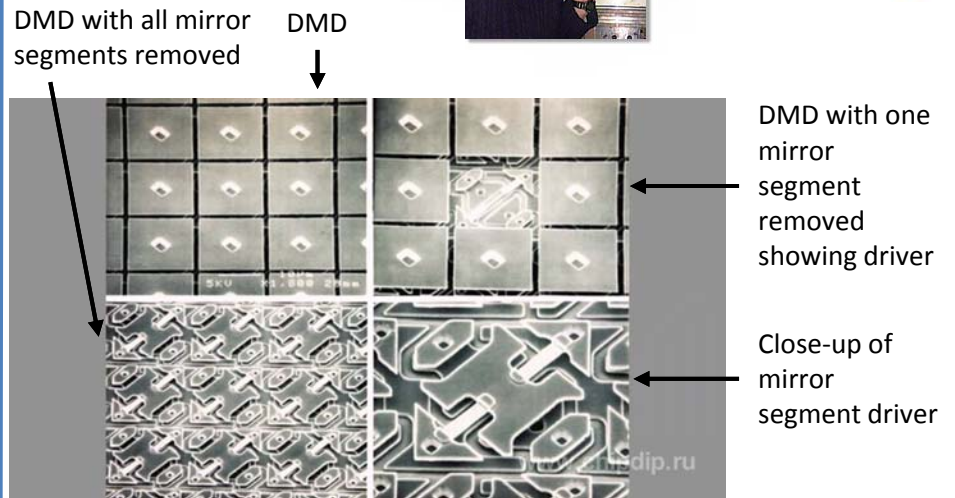


Objectives and Key Challenges:

- There is a need for a technology to allow for selection of targets in a field of view that can be input to an imaging spectrometer for use in remote sensing and astronomy.
- We are looking to modify and develop Digital Micromirror Devices (DMD) for this application.

Significance of Work:

- Existing DMDs need to have the commercial windows replaced with appropriate windows for the scientific application desired.



Approach:

- Use available 0.7 XGA DMD devices to develop window removal procedures and then replace delivered window with a hermetically sealed UV transmissive one of Magnesium Fluoride, HEM Sapphire and fused silica. Test and evaluate such devices and also Cinema DMDs.

Key Collaborators:

- Sally Heap, Manuel Quijada (NASA/GSFC)
- Massimo Robberto (STScI)
- Alan Raisanen (RIT)
- Jonny Pellish (NASA GSFC)
- Tim Schwartz (NASA GSFC)

Current Funded Period of Performance:

- May 2014 – May 2016

Recent Accomplishments:

- 0.7 XGA DMD delivered and 1.2 D2K DMDs ordered.
- XGA devices re-windowed successfully MgF₂.
- Heavy ion testing shows good results.
- Contrast measurements indicate high contrast.

Next Milestones:

- UV-test XGA DMD at GSFC (March 2015)
- Re-windowed DMDs from L-1 Technology (May 2015)
- Cinema DMD and electronics delivery (July 2015)

Application:

- Can be used in any hyper-spectral imaging mission.
- Galaxy Evolution Spectroscopic Explorer

TRL_{In} = 4 TRL_{Current} = 4 TRL_{Target} = 5