Detector performance improvements for Roman CGI and HWO

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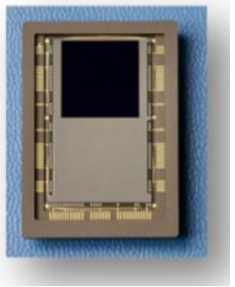
JPL

Detectors for Roman Coronograph Instrument

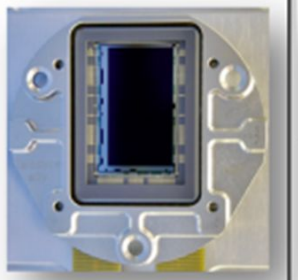
Collaboration between JPL, Teledyne e2v and CEI

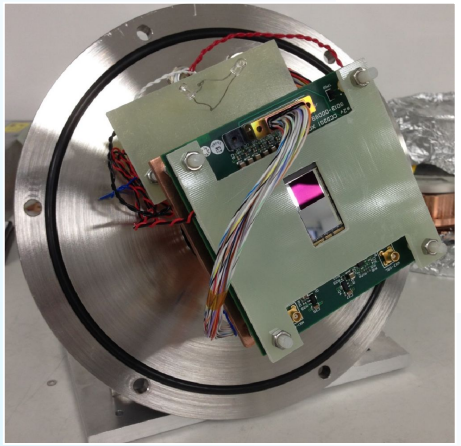
- Coronograph needs photon-counting detectors
- Teledyne e2v Electron-Multiplying CCD201
- CEI performed extensive characterisation and radiation damage testing
- Optimising device operation
- Improvements on pixel and readout architecture
- Several test devices developed and tested
- CCD311 - flight model for Roman CGI

CCD201
commercial

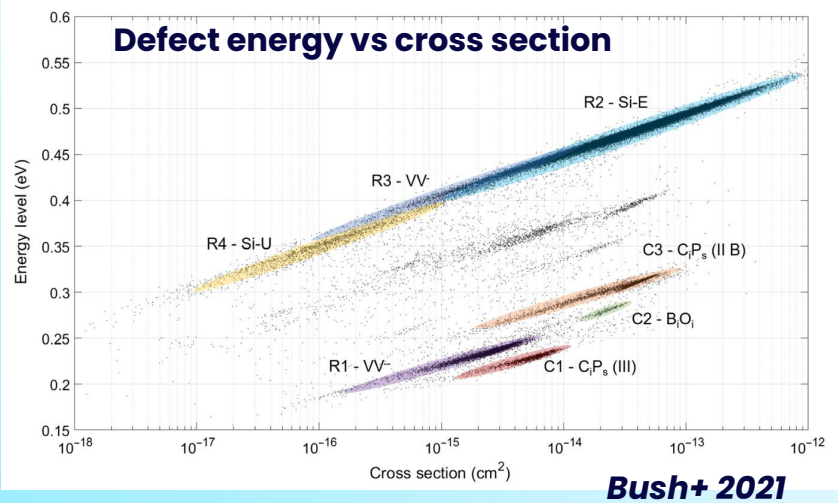


CCD311
flight





Morrissey+ 2021



Bush+ 2021

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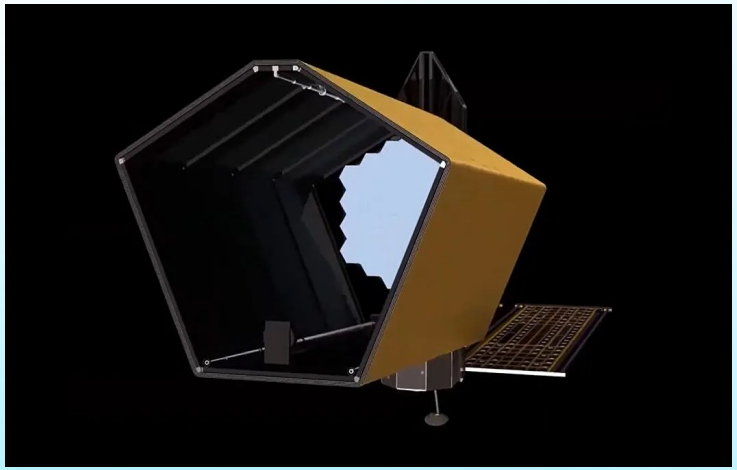
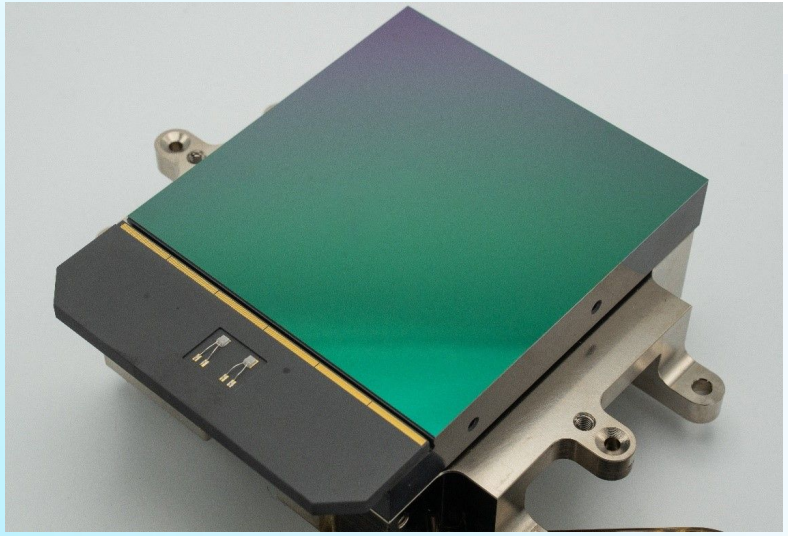
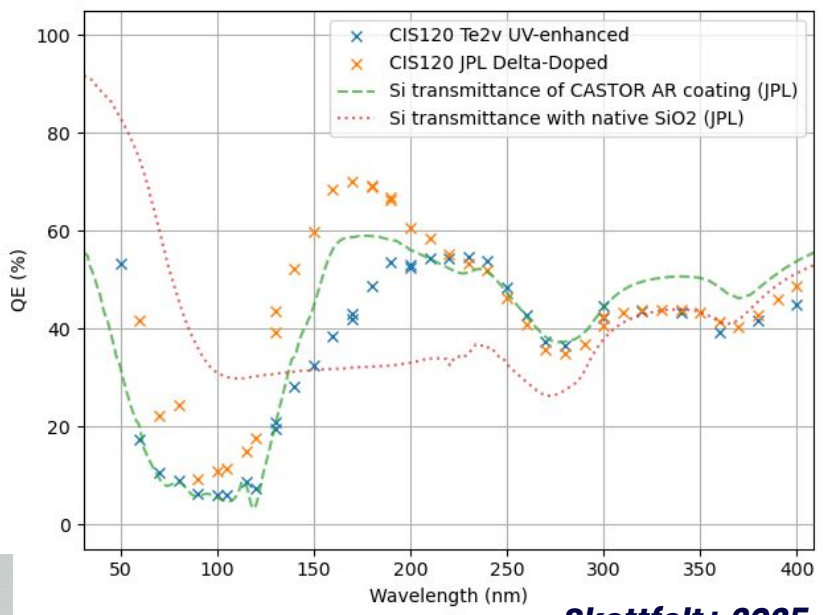
UV Detectors for HWO

- JPL's Delta-doping technology applied to Teledyne e2v detectors
- Improve the performance, especially for UV photons
- Testing and characterisation by CEI
- Delta-doping CMOS detectors for CASTOR and HWO
- Working with JPL on AR coatings for range of HWO instruments

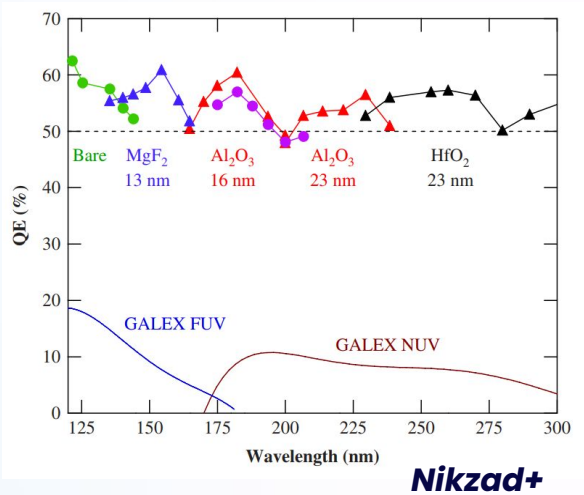


Teledyne e2v CIS300





Skottfelt+ 2025



Nikzad+ 2012