

Detector Systems for MODS

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What it Does

- Operate Detector
- Deliver Rectified Image
- Some Calibration Functions
- Ability to time exposure

System Goals

- Detector Limited Performance
 - Now
 - And forever
- Flexible Operating Modes
 - Nod and Shuffle
 - Frame transfer
 - Region of Interest
 - Skipper Amplifiers
 - + ?

Configuration

Based on existing (and successful) architecture

- Data taking computer with sequencer (ex IC) in warm room
- Symmetric, dedicated, and fast fiber link to telescope focus
- Single package with detector electronics (ex HE)
- No (or limited) cold/vacuum electronics



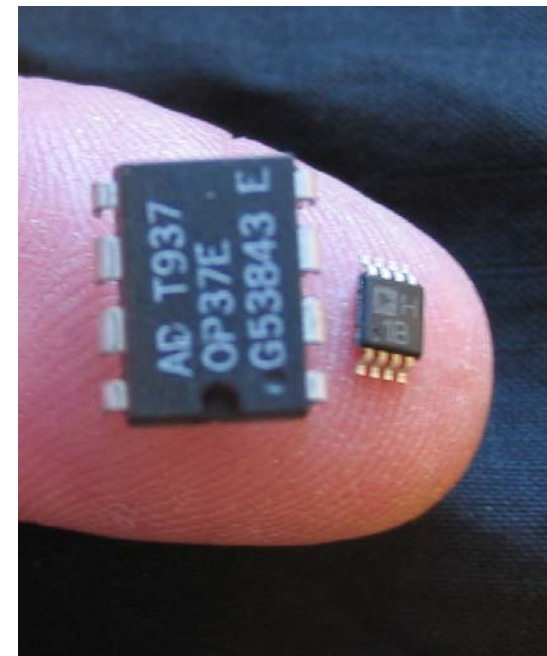
Possible New Features 1

- Cryo Tigers vs. LN₂, go tigers
 - Operationally attractive
 - Smaller and Lighter
- Cryo Tigers vs. LN₂, wet is good
 - Simpler vacuum system
 - Lower initial cost
 - Known technology



possible New Features 2

- Multiple (32?) Parallel preamps
 - Gain grows like N , noise like \sqrt{N}
 - Fully differential structure
 - Naturally provides a range of gains
- Transformer coupling
 - Better impedance match
 - Easy conversion to differential mode



possible New Features 3

- Separate integrators for signal and base line to allow better reset
- Separate integrators for two (or more) gains
- Separate ADCs (16 bit?) for each integrator
- Local digital subtraction and scaling to form 18 to 20 bit result

Detector Options

- We have 4k x 4k Lesser devices for MODS 1
- We will entertain proposals for ~8k x ~3k devices (excellent choice for Blue, OK for Red)
 - Bredthhauer + Dalsa + Lesser
 - E2V
 - ?
- Possible Red enhancements
 - Thicker epi material (30 to 40 μ)
 - High Resistivity, fully depleted LBNL design
 - Low fringing E2V design

