MODS Introduction

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MODS Progress Review – 2004 April 22

MODS Introduction

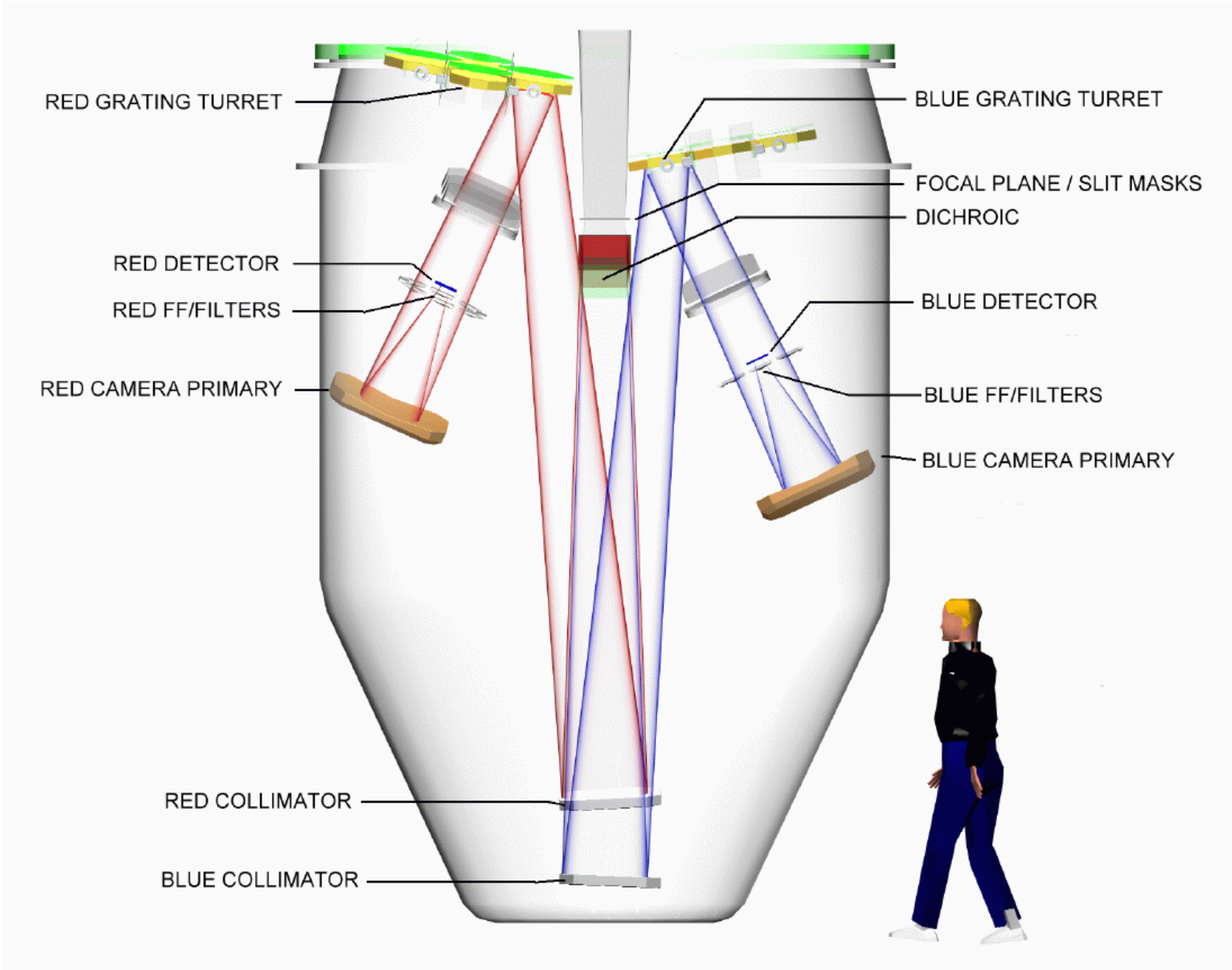
Multi-Object Double Spectrograph

- High throughput
- Broad wavelength coverage: 320-1000nm
- Resolutions of 10^3 – 10^4
- Long-slit and multi-slit modes
- Imaging capability

MODS Introduction

Design Philosophy

- Modular design
- Utilize successful approaches of previous OSU instruments
- Allow for future upgrades
- Control costs and work within available resources of personnel and cash


RED GRATING TURRET
BLUE GRATING TURRET
FOCAL PLANE / SLIT MASKS
DICHROIC
RED DETECTOR
RED FF/FILTERS
BLUE DETECTOR
RED CAMERA PRIMARY
BLUE FF/FILTERS
BLUE CAMERA PRIMARY
RED COLLIMATOR
BLUE COLLIMATOR

MODS General Properties

Each MODS channel can accommodate

- 4K × 8K CCD, 15μm pixels
- 3 gratings + imaging flat
- 8-position filter wheels

The two channels share a common focal plane

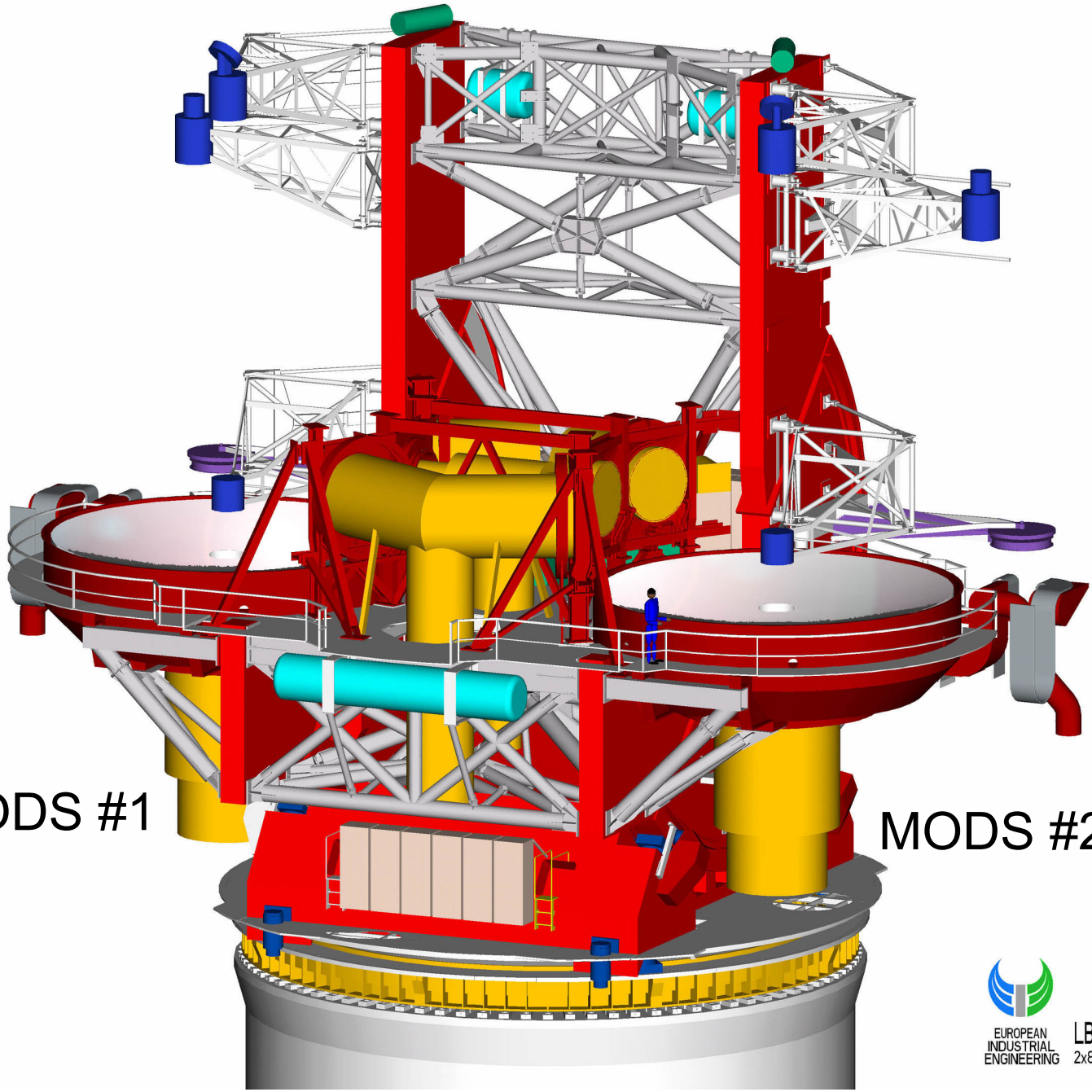
- ~20 individual slit masks

Modular design to permit future upgrades

- R=15000 cross-dispersed mode
- Adaptive Optics modes (1' FOV)
- Integral field mode

MODS Operating Modes

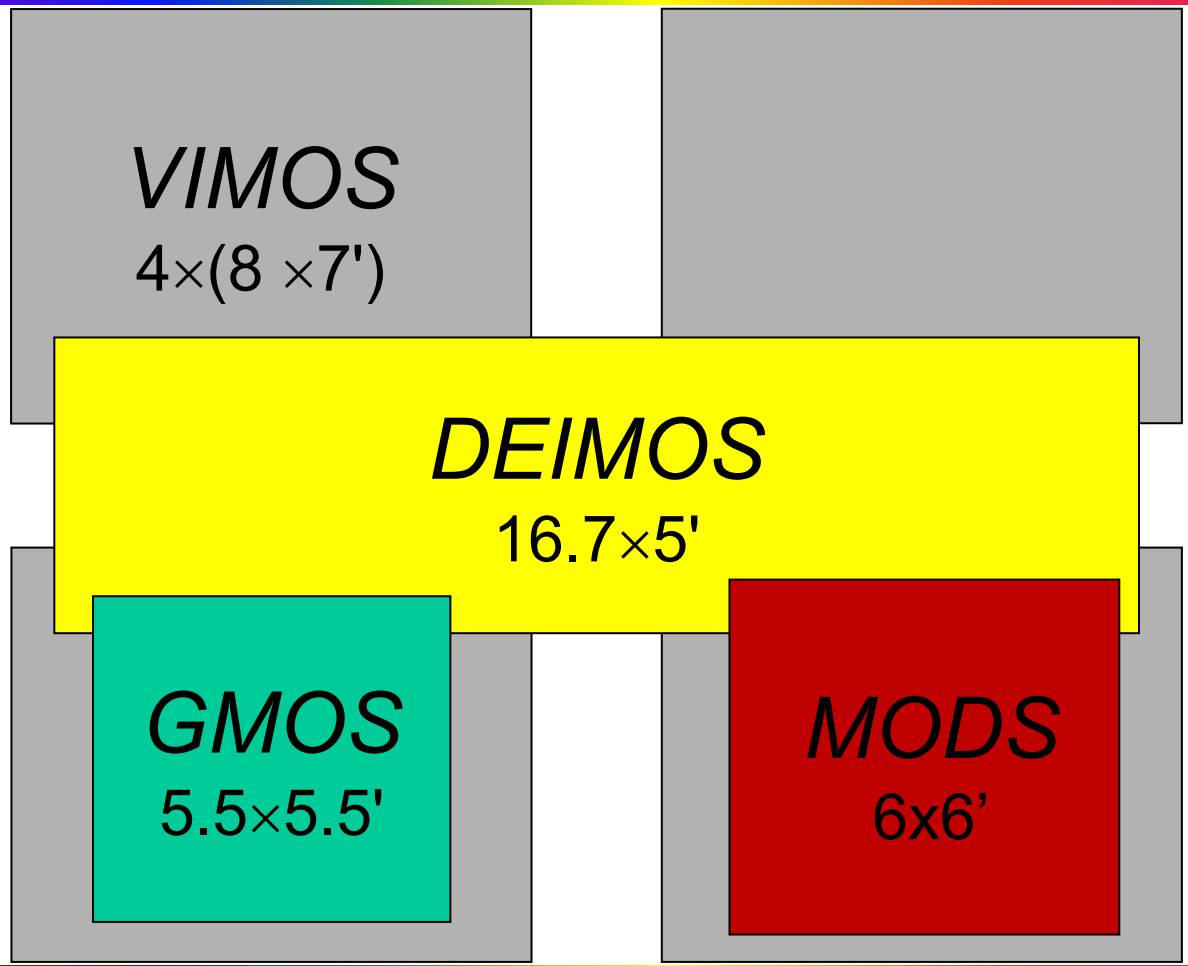
	Blue	Red
Range (nm)	300–600	500–1000
Mode	Spectral Resolution (0.6" slit, 4 pixels)	
Lo-Res	2000	2000
Hi-Res	8000	8000
Imaging	Filters	Filters



EUROPEAN INDUSTRIAL ENGINEERING

LBT Project
2x8.4m Telescope

MODS Multi-Slit Field



Team MODS

Project PI: Patrick Osmer

Project Manager: Darren DePoy

Project Scientists: Richard Pogge & David Weinberg

Instrument Scientist: Bruce Atwood

Chief Engineer & Designer: Tom O'Brien

Optical Designer: Paul Byard

Electronics Engineer: Dan Pappalardo

Mechanical Engineer: Mark Derwent

Programmer: Jerry Mason

Students: Jennifer Marshall, Chris Morgan, Juna Kollmeier

MODS Progress

Optics

- All large optics delivered or on schedule
- Most small optics delivered or ordered
- Paul Byard

Mechanical

- Many mechanisms designed, fabricated, and tested
- Structure nearly complete
- Tom O'Brien and Mark Derwent

Software

- Prototype systems deployed and working
  - Direct imaging filter wheels at MDM & CTIO
  - MODS filter wheel in lab
- Rick Pogge

MODS Progress

Image Motion Compensation System

- Crucial for MODS operations
- Encouraging lab demonstrations
- Jennifer Marshall

Detectors

- Plans in place
- Options exist
- Darren DePoy/Bruce Atwood

MODS Deployment

Two-channel instrument in early-2006

- Abandon plan to deploy “blue-only” MODS
  - LBT secondary delay
  - LBT Primary #2 installation schedule
  - Aluminizing impact on team resources greater than anticipated
- Schedule currently under review
- Better deployment schedule estimate in 2-3 months
  - Result of on-going project management review
  - Carrie Lewis will describe review goals

MODS Schedule

Major milestones by late-2004

- Detailed integration plan
- Detailed lab test plan
  - Definition of lab acceptance tests
- Continue designing, assembling, testing sub-systems
- Deploy prototype 4K CCD

Begin integration and test in early-2005