

FIRE Status Report

Rob Simcoe (MIT)

*F*olded port

*I*nfra

*R*ed

*E*chellette

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*R*ed

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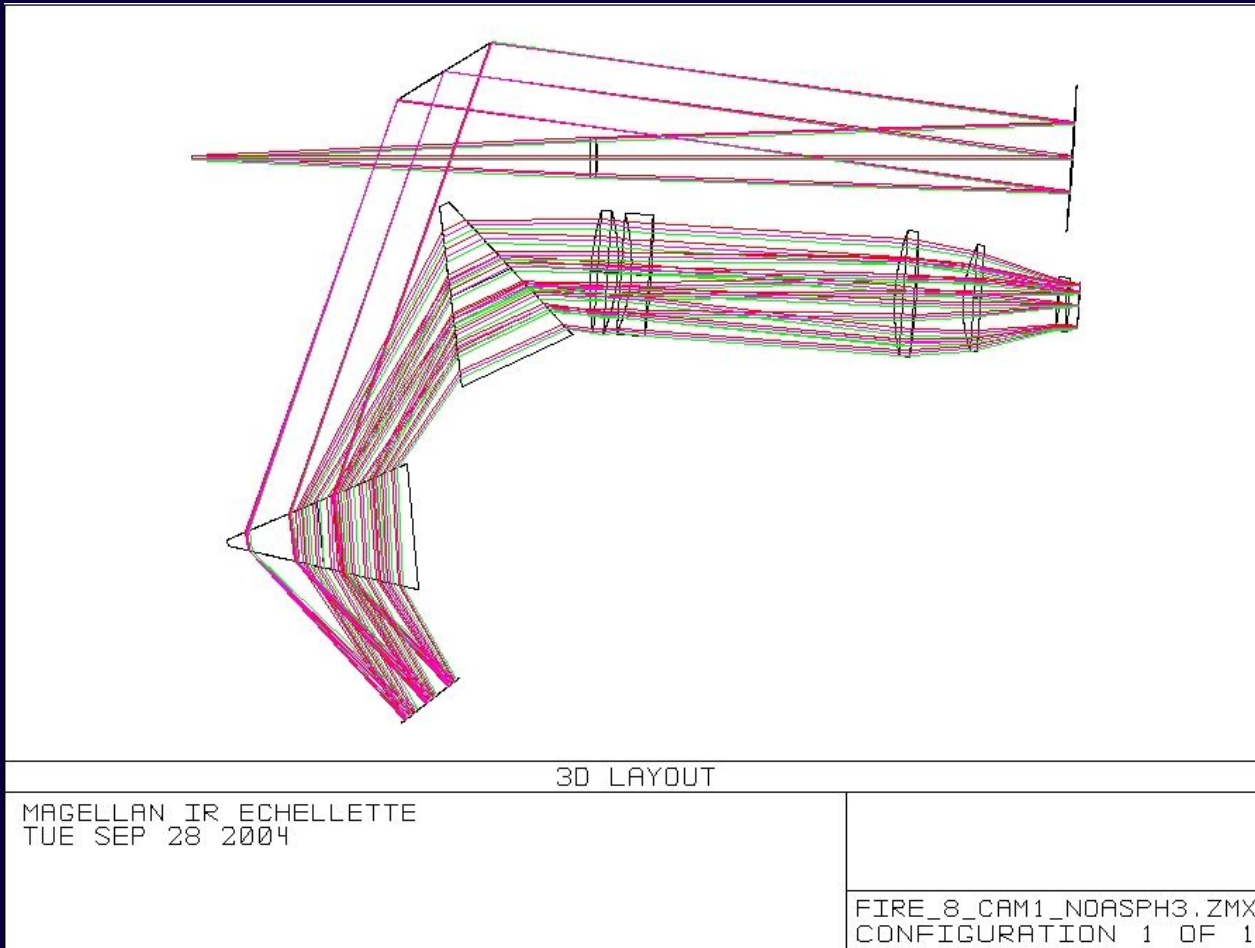
Diverse Science

- Redshift > 6 QSOs / IGM
- Low-mass stars
- IR-GRBs
- $z \sim 1$ galaxies
- Stellar pops
- Much more...

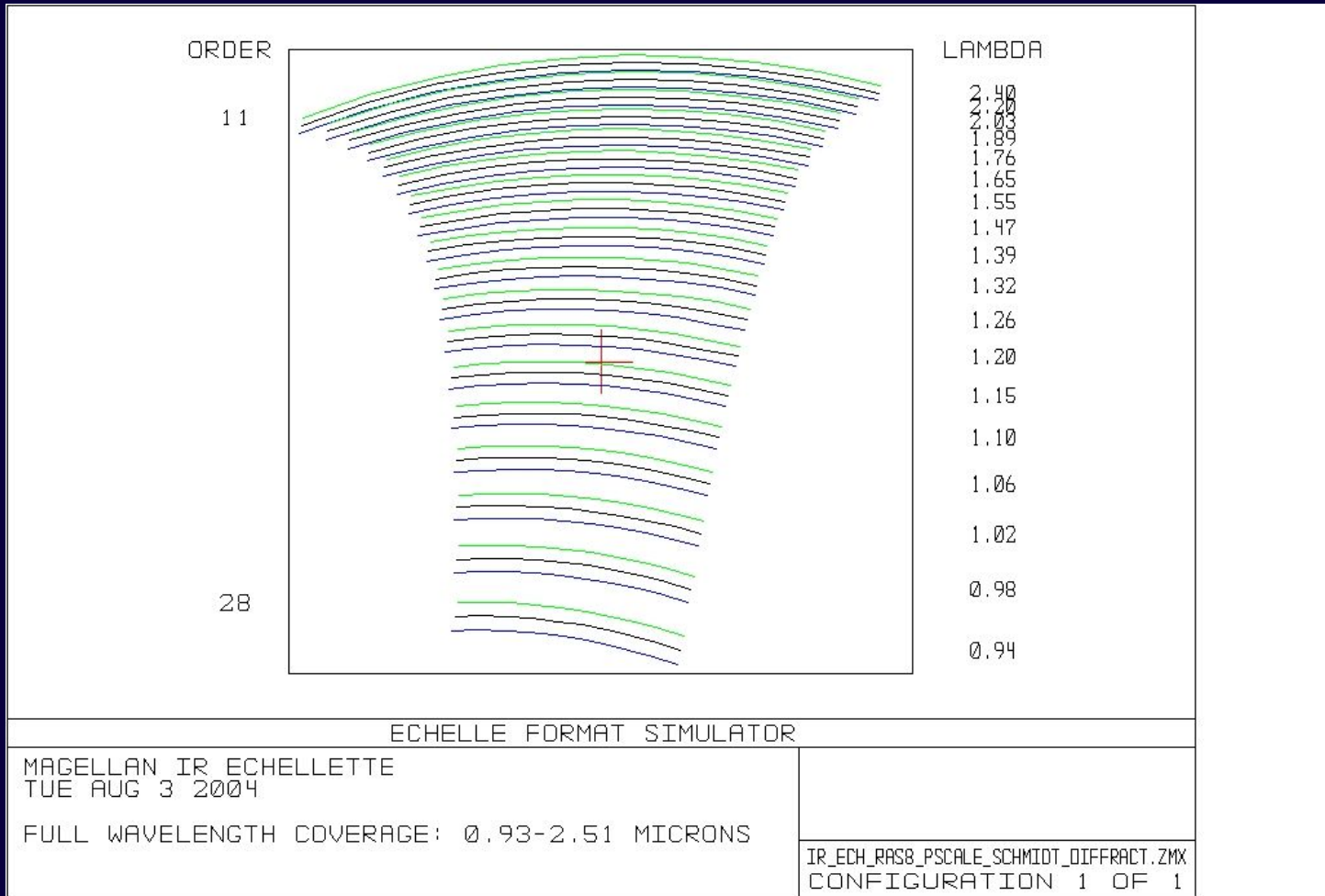
Instrument Concept: An IR Cousin of ESI / MagE

- R=6000, prism X-dispersed echellette
 - R=12,000 for 2 pixel slit (best seeing, GLAO)
- F/11, folded port
- 0.15" / pixel
- Single Shot J, H, K
- R ~ 1000, high throughput mode

Optical Layout



Spectral Format



Other Design Points

- HAWAII-2RG
 - Much of cost, complexity
- IR Slit viewer
 - J/H off-the-shelf InGaAs
- CC fridge cooling
 - LN2 initial cool down
 - Electrical, vibration isolation
 - plumbing



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Care and Feeding

- ~ 2 moving parts
 - Slit selection
 - Mirror mechanism
- CC refrigerator
- No filter/disperser swapping
- No LN2 fills

Dugout

- MIT
 - Mechanical design, assembly/testing, high-level software, lab space, matching funds (Simcoe, Burgasser, Schechter)
- Michigan
 - Optical design (Bernstein), Mechanical design, shop/fab, optical advice (Mateo)
- Arizona
 - Facilitating detector negotiations (Fan, M. Rieke)
- CfA
 - Consultation on optics, thermal mountings (Martini)
- Carnegie
 - High-level design advice/review (Persson, Sheckman, Uomoto...)

Finances

- Committed: ~ \$350K (MIT internal)
- Pending
 - Institute
 - Kavli / instrumentation development
- NSF / MRI
 - Burgasser PI

Timeline

- Reviews essential
- Target schedule
 - January 2005: MRI = conceptual review
 - ~ August 2005: CDR
 - Fall 2006: Pre-ship
 - Winter 2006-2007: on-sky

From Concept to Design

- Unique instrument, new science
- Team nearly in place
- Initial funding, targeting 2005 MRI
- 2007