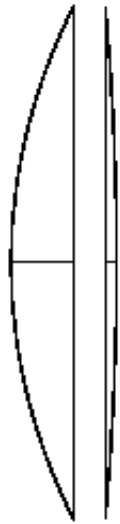


IMACS Echellette

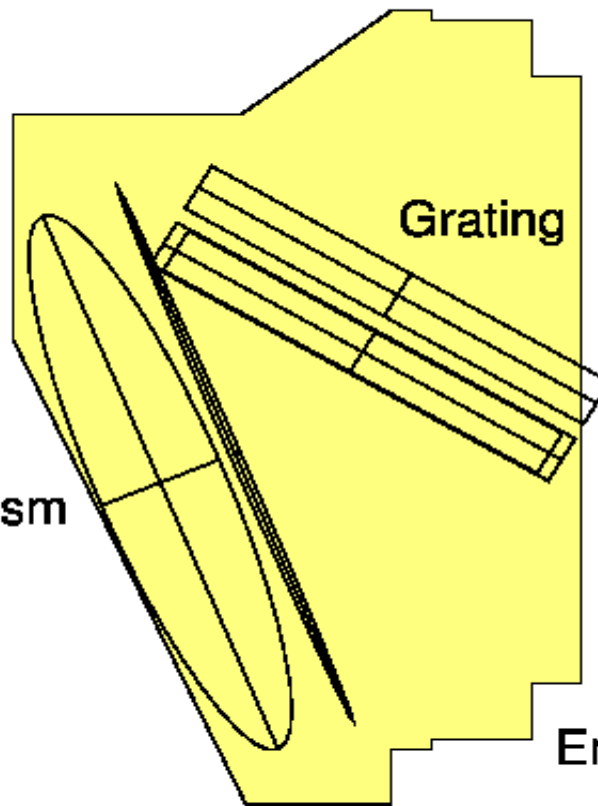
B. Sutin, T. Hare & A. McWilliam

- Multi-Object Echellette (MOE)
- Grating + Prism cross-disperser in grating module
- Grating: 245 l/mm, 37-degree blaze, 160x214mm (20% overfill loss)
- Prism: fused silica, 13-degree apex angle, 300x200mm, 63mm base

Collimator

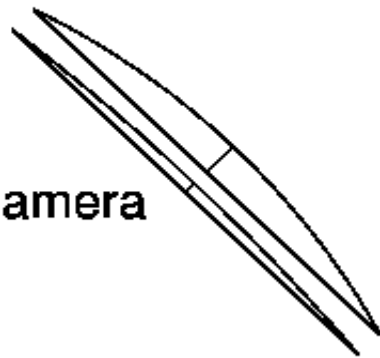


Prism

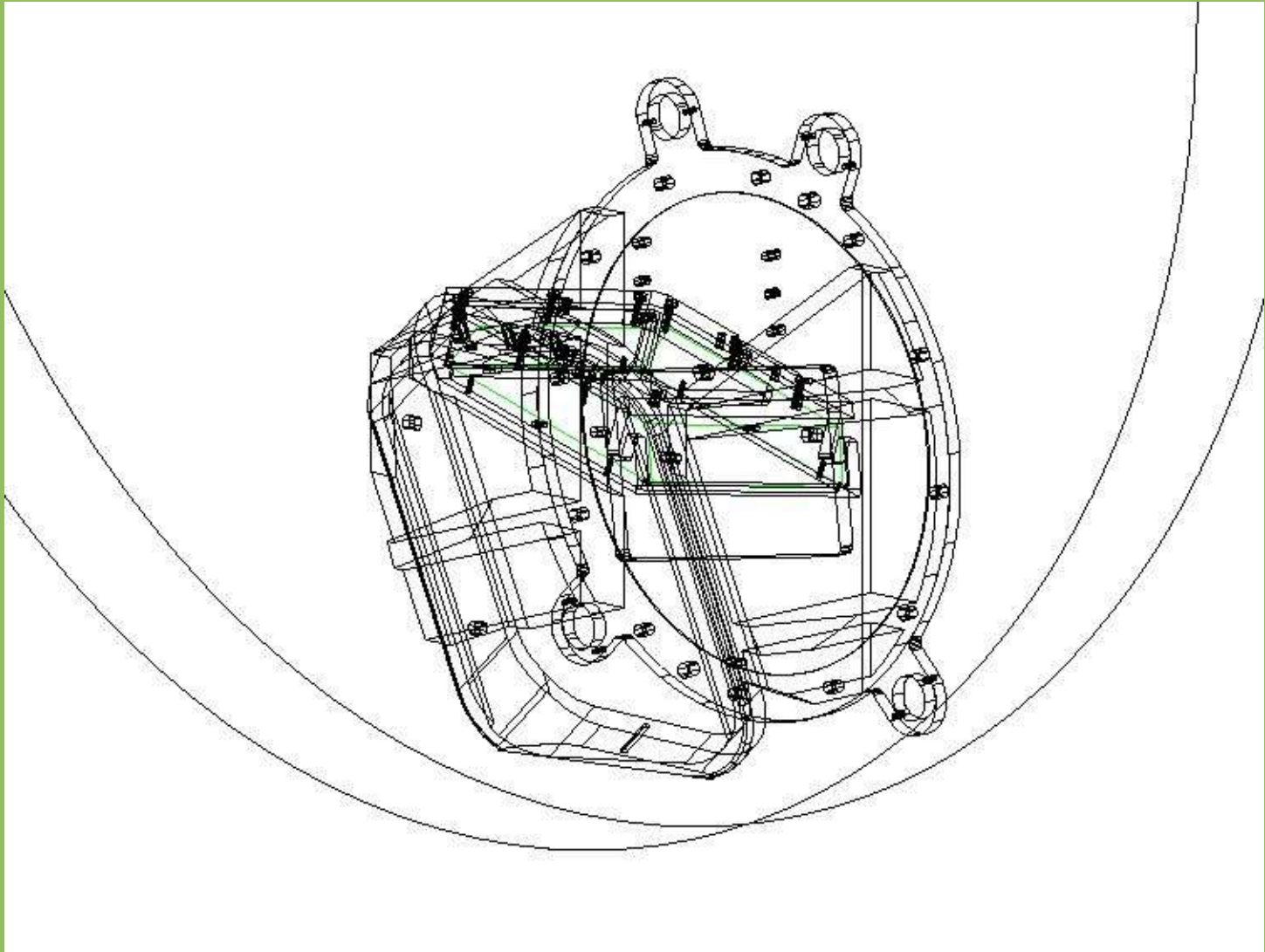


Grating

Camera

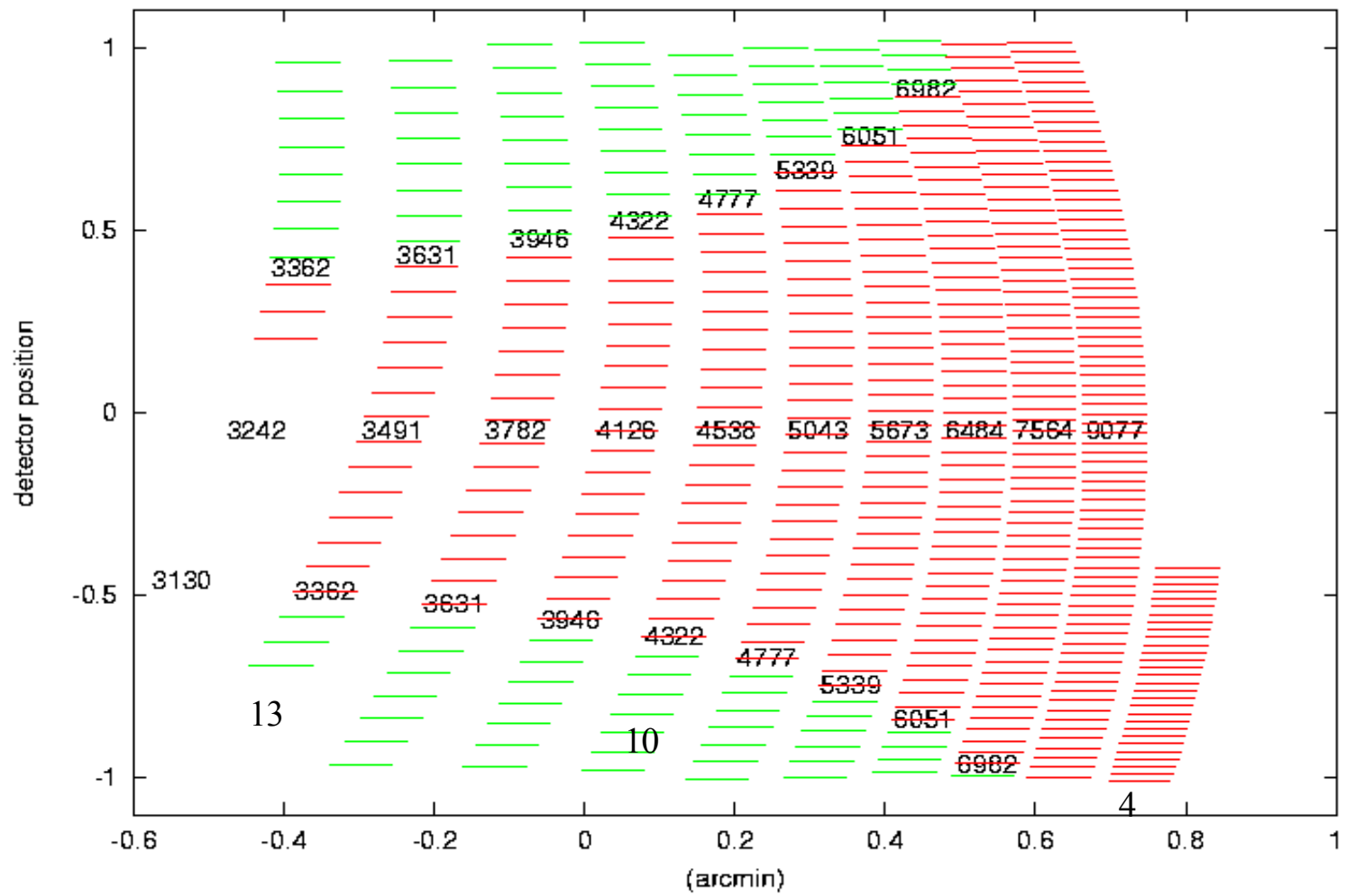


Envelope



MOE Characteristics

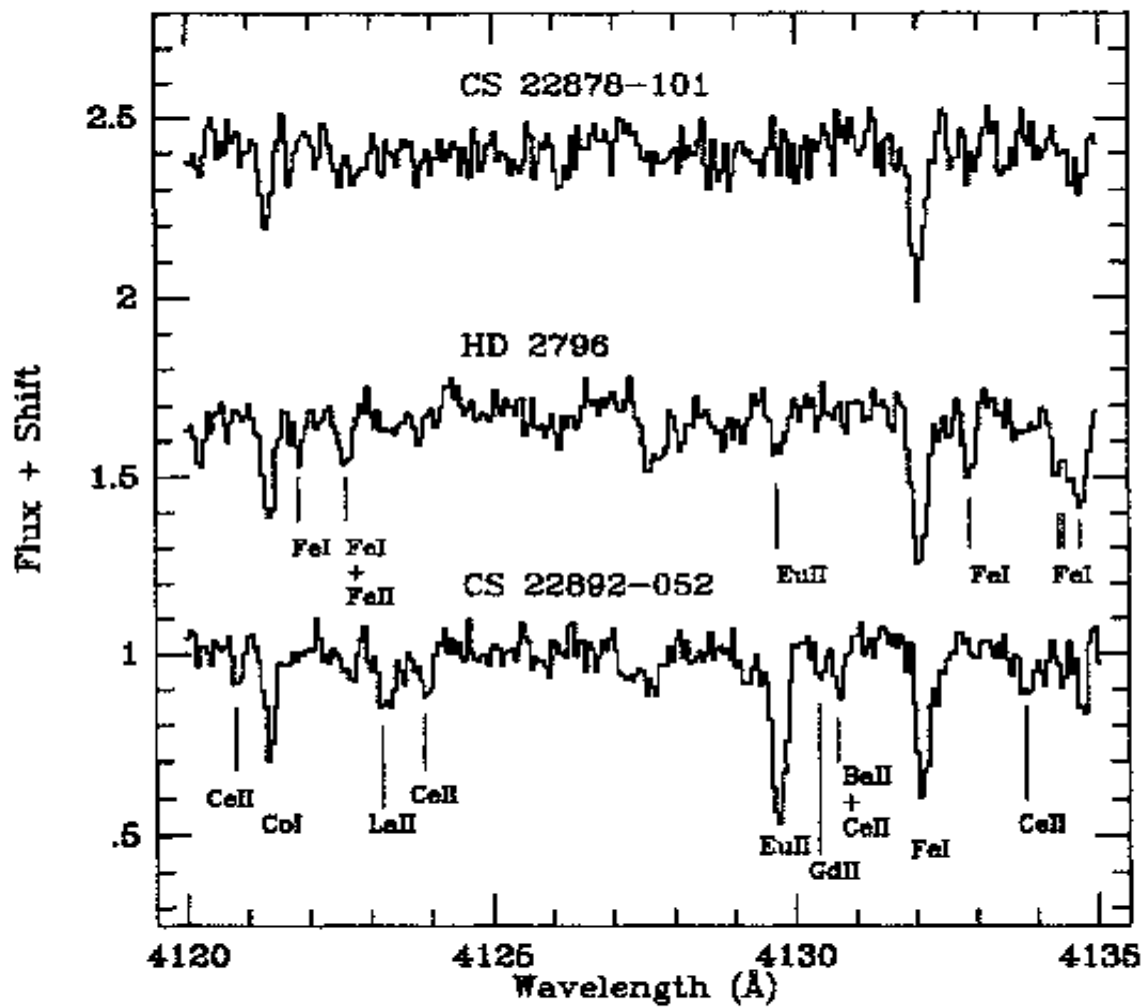
- Wavelength range: 0.34–1.0 μ
- Resolving power (0.5 arc sec, 2.4 pix): R=21,000 (17,000-26,000)
- Slit length: 5 arc seconds
- 15x15 arc min. field (always >50% coverage)
- Complete coverage: 1.5' at 6500A, 3.7' at 5000A
- SPIE, 2003, vol.4841, p.1357.

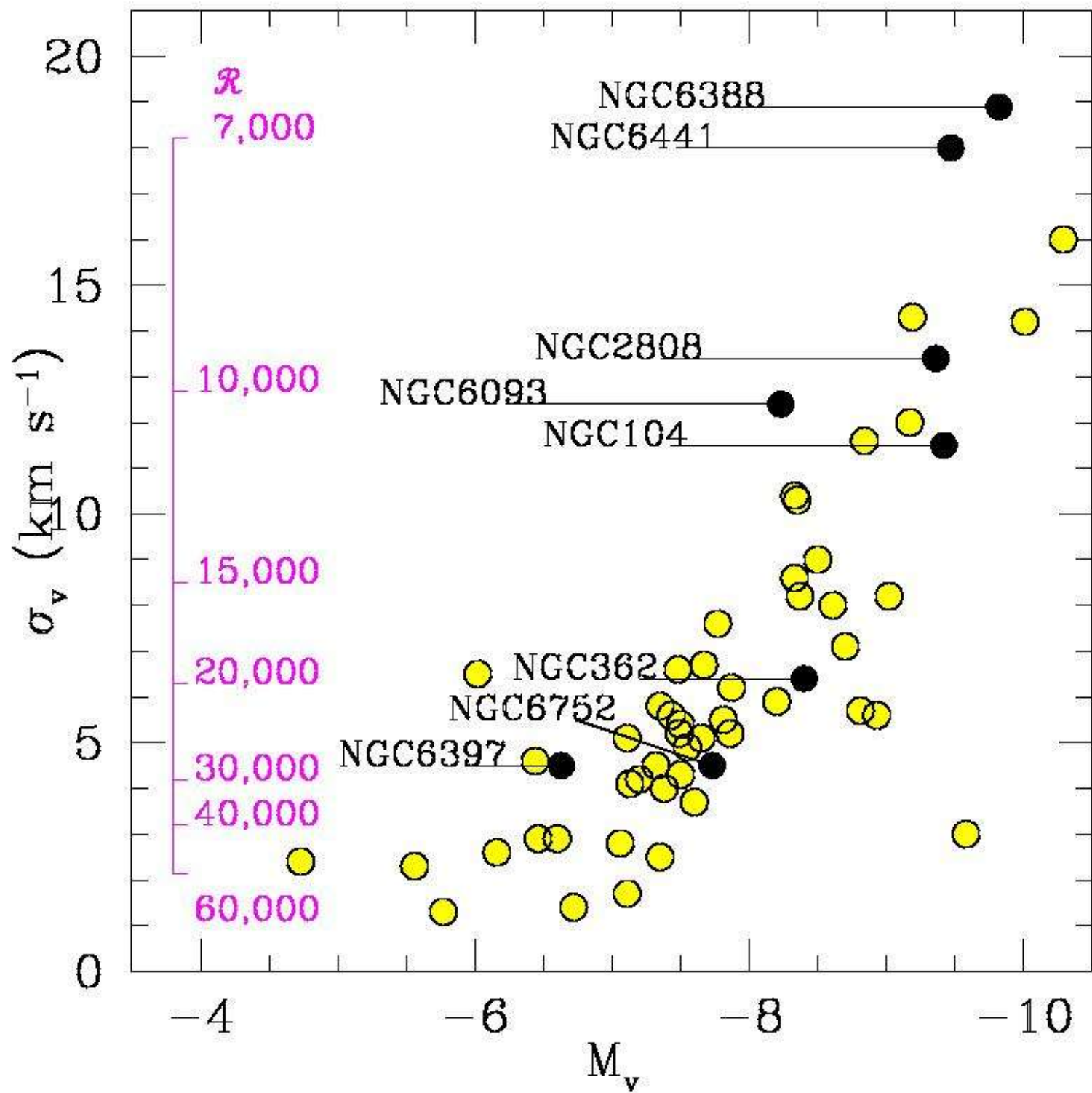


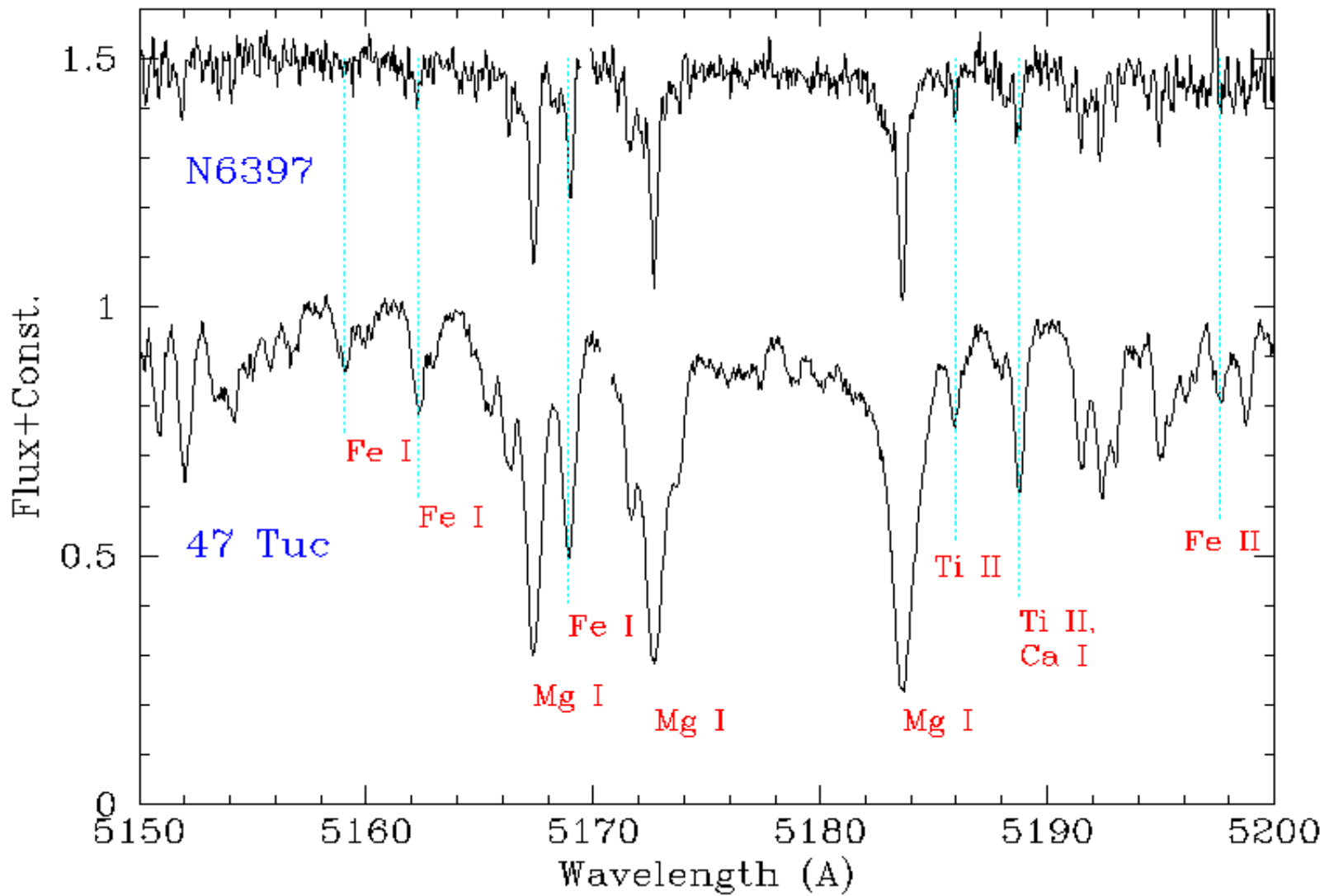
- 12.5 objects per frame (full λ coverage)
- Blocking filters increase number of objects (~ 100 single order)
- Throughput guess: 50-80% of MIKE (0.12–0.20)
- S/N ~ 50 per pixel, at 6000Å, for $V \sim 18$ in 1 night

MOE Science

- Abundances of RGB stars in Local Group dSphs.
- Abundances from integrated light spectra of extra-galactic globular clusters.
- Dynamics and masses of extra-galactic globulars.
- Abundances of stars in Galactic GCs.
- Abundances of stars in the Galactic bulge.







Spectrum of Instruments

- MIKE: $R=20,000-60,000$; single object.
- MIKE fibers: $R\sim 20,000-40,000$, 128 objects, velocity meter, limited λ , sky subtraction difficult.
- MagE: $R\sim 5,600$ (1 arc sec slit); single object.
- IMACS-1200: $R\sim 21,000$, one λ setting, off blaze.

MOE Status

- Grating: delivered (4/2003).
- Prism: delivered; AR overcoat done (5/2003).
- Holder: design 95% complete; FEA done.
- Not yet done:
 - holder fabrication (ociw shop)
 - dummy optics (ociw shop)
 - mask-cutting software upgrade
 - engineering test

MOE Funding

- Optics and coatings funded from A.McWilliam grant money (cash flow assisted by OCIW).
- Optical and mechanical design work donated by OCIW.
- Holder materials (AM), machine work (OCIW).
- Costs: Grating \$ 5,700
Prism \$18,000
AR coat \$ 5,900