Hot White Dwarf Stars in Stripe 82

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DES Calibration Mtng. 13Jun08

Sloan Digital Sky Survey

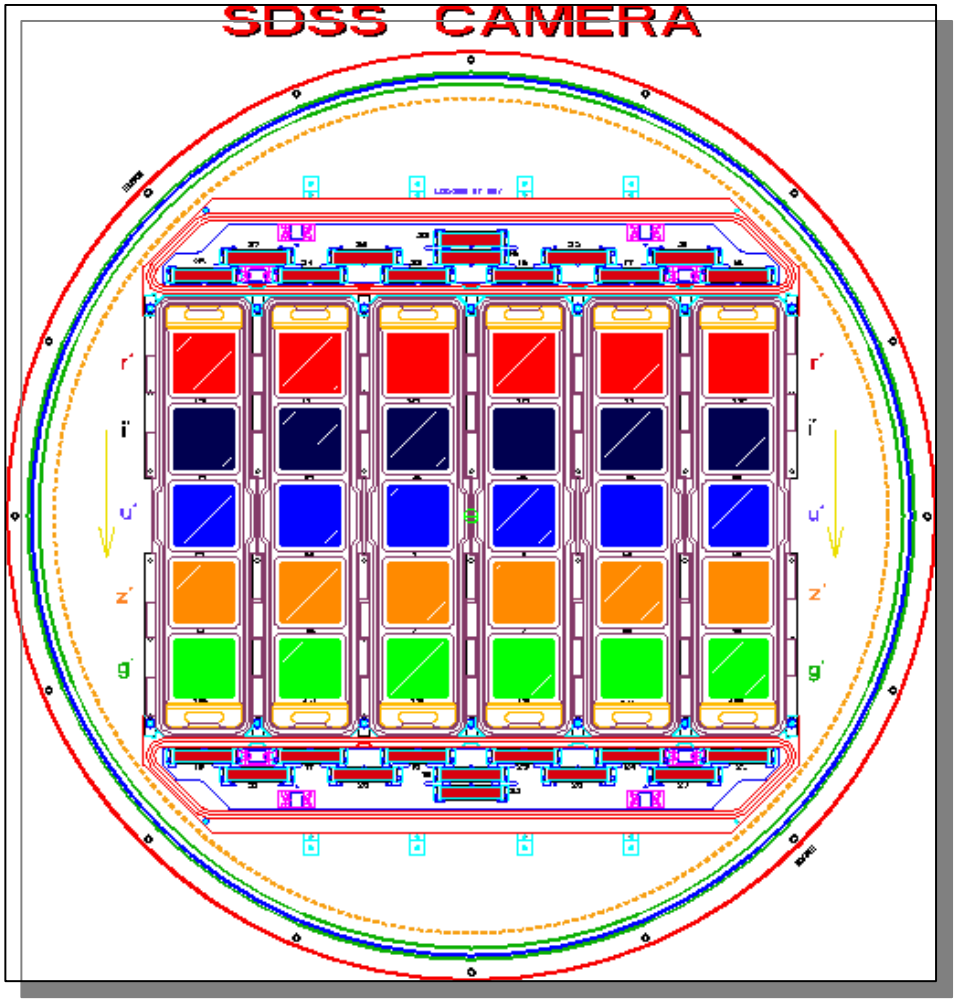
Goals:

1. Image ¼ of sky in 5 bands to r=23 mag
2. Obtain redshifts of 1 million galaxies to r=18
3. Obtain redshift of 100,000 quasars to r=19
4. Approximately 100,000,000 photometric objects!

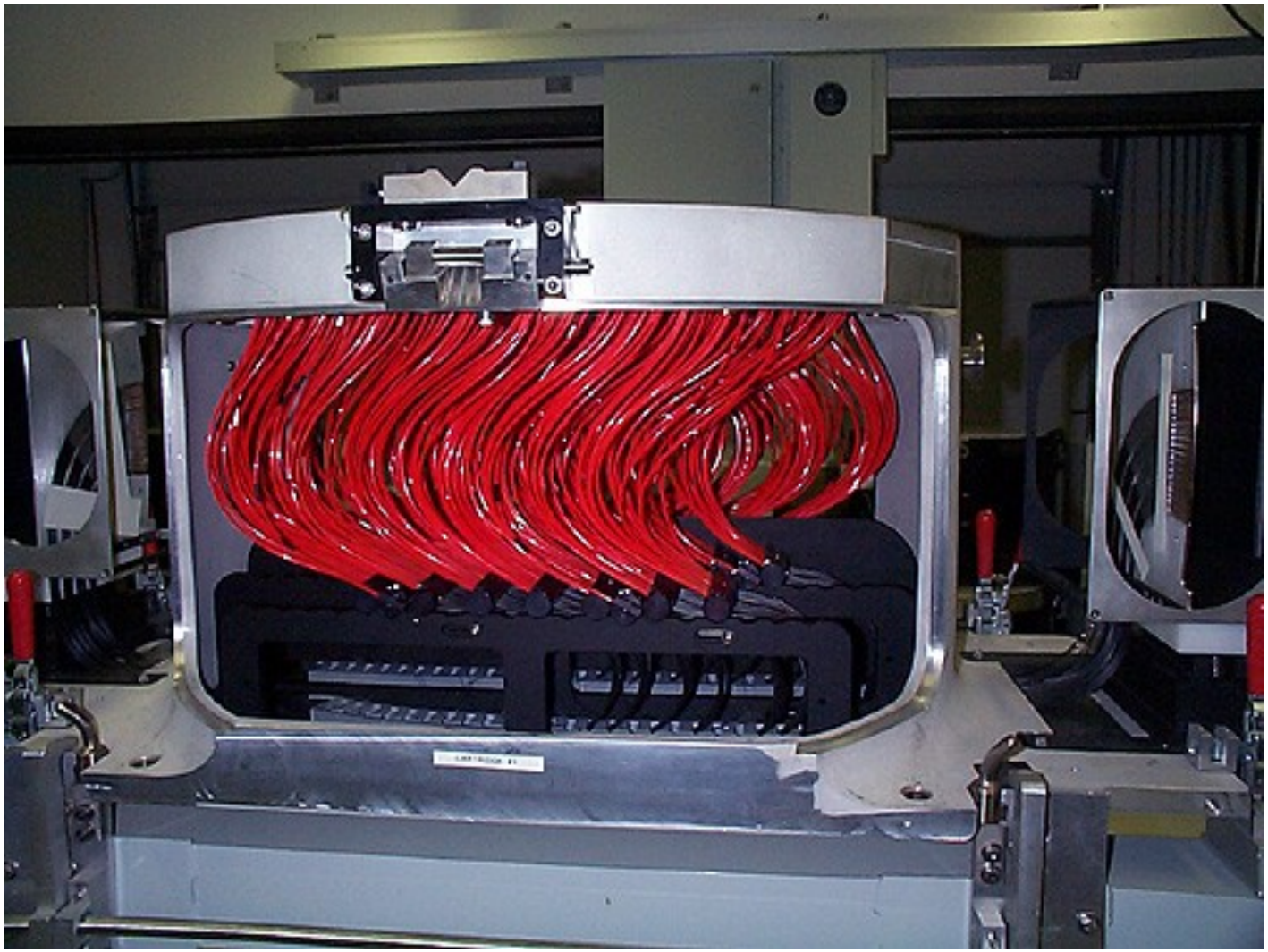
Technique:

1. Construct a 2.5 m telescope, CCD array imager, 640 fiber spectrograph at Apache Point, New Mexico
2. Operate for 5 years
3. Find a way to pay the bills! (~$83 million through 2005)

The Mosaic Camera



Fiber Cartridges (9 total)



So you don't care about redshifts?

- McCook & Sion (1999) list 2249 WDs
- DR1 (~20% of SDSS) found 2561 + 138(?)!
- How?
  - Serendipity: 1310
  - QSO: 709
  - Hot Standards: 531
  - White Dwarf: 157
- New Variables, DQVs(?), DBH, Low mass, High mass, DO subtypes, ...

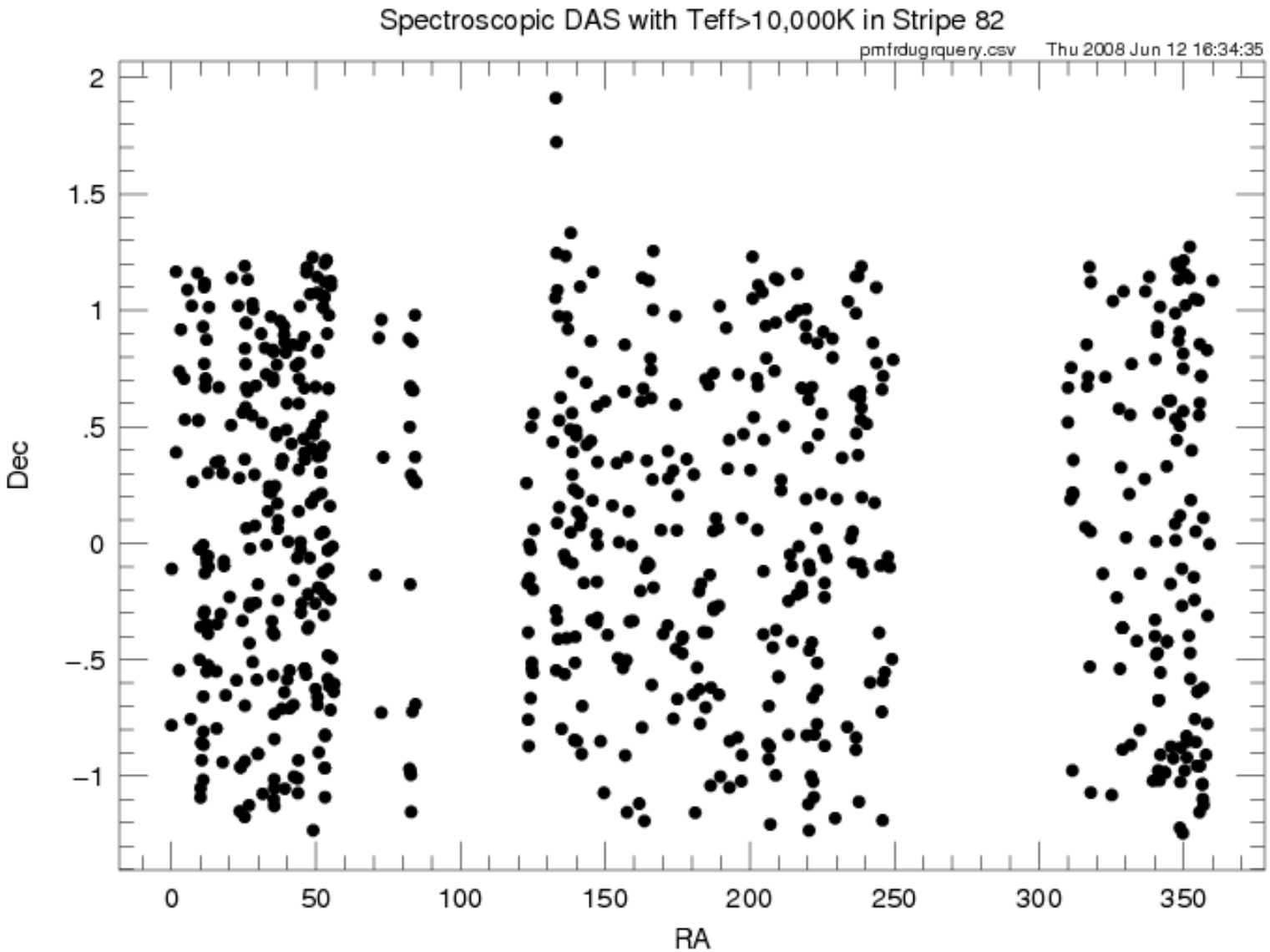
A brief history of SDSS WDs

- Pre-SDSS: Fan 1999 – Photometric simulations of WD and other objects in SDSS colors
- EDR: Harris et al. 2003 – 269 WDs (190 deg^2)
- DR1: Kleinman et al. 2004 – 2551 WDs (2100 deg^2)
- DR4: Eisenstein et al. 2006 – 9316 WDs (4783 deg^2)
- DR6: Kleinman et al., *in progress* – 3863 new WDs from DR4 and counting
- EDR-DR6 – all spectroscopically confirmed WDs
- ~80% of these WDs are DAs

Hot DAs in Particular

- I took the DR1, DR4, and current DR6 catalogs, looked for objects only in stripe 82 (plate center eta within 1.25 degrees of 82.5), and removed duplicates with same PMFs:
  - 732 DAs with Teff_fit >= 10000K
  - 173 of which have Teff_fit >= 20000K
- DAs pulsate in an SDSS fit temperature range ~10800 -- 12500K (478 of the 732 >= 12500K)
- DR6 catalog will refit all previous SDSS WDs with improved models and more WDs are still to be found...

Where are they?



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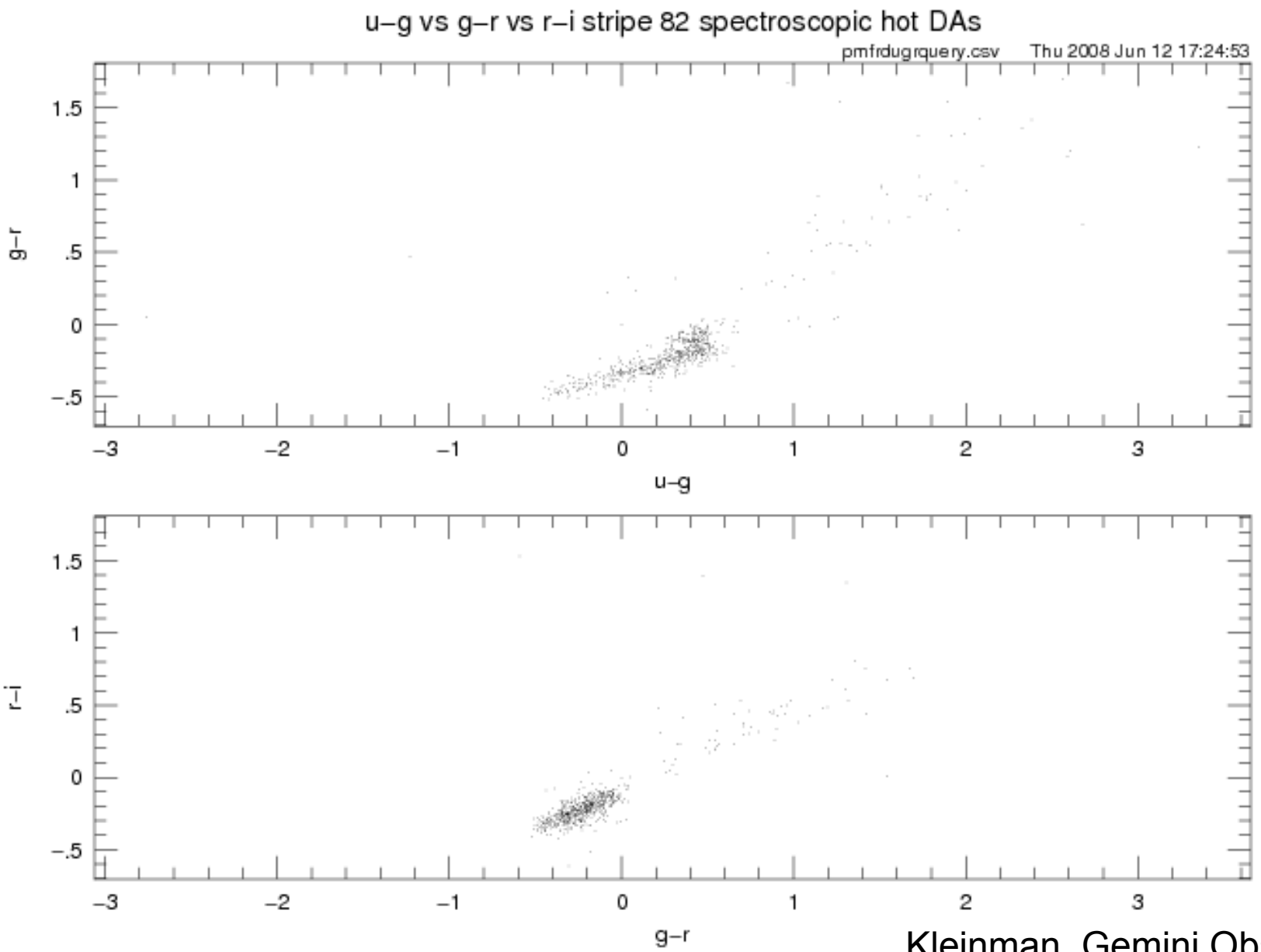
Where are they?



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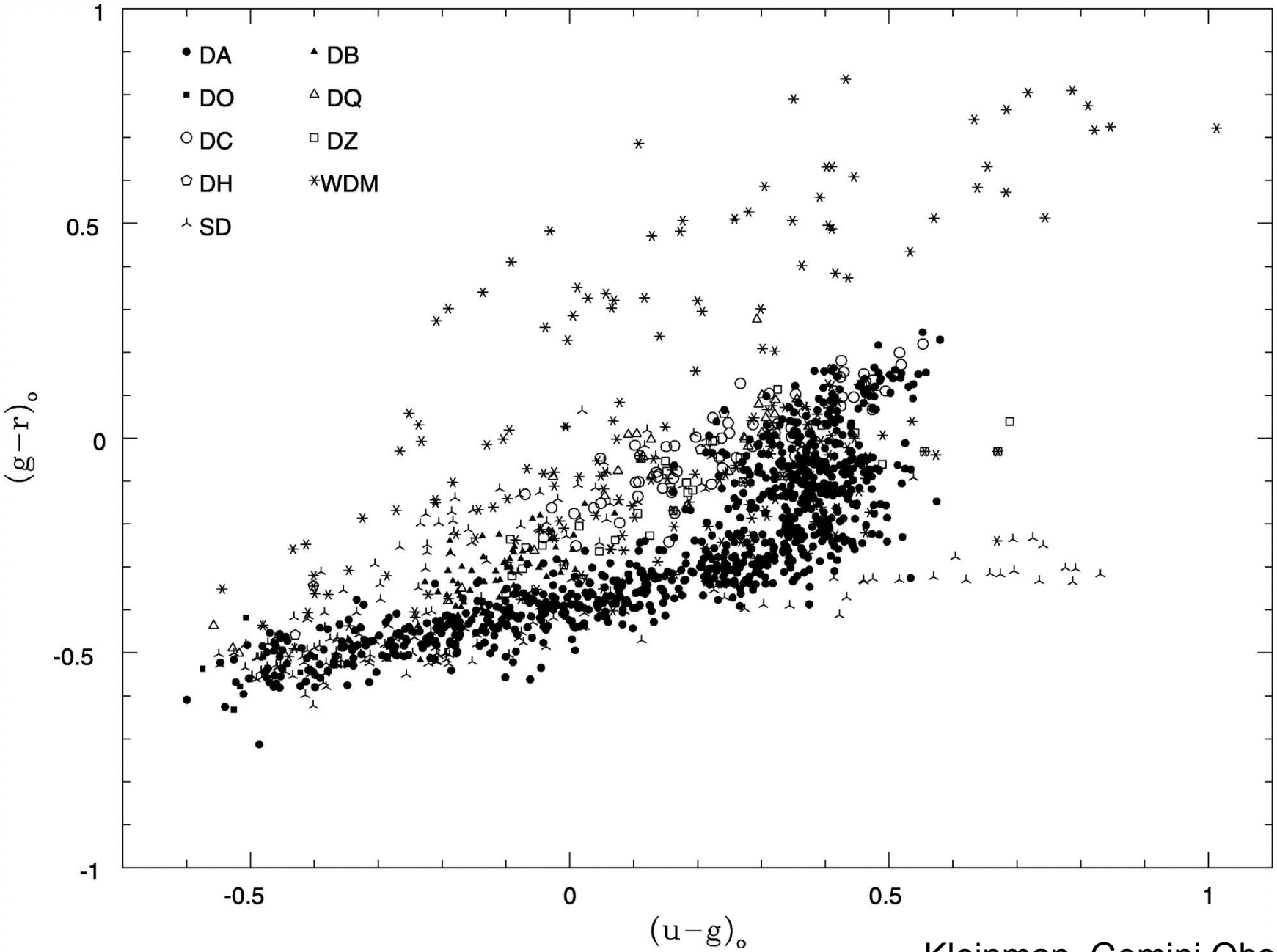
DR1 WDs...



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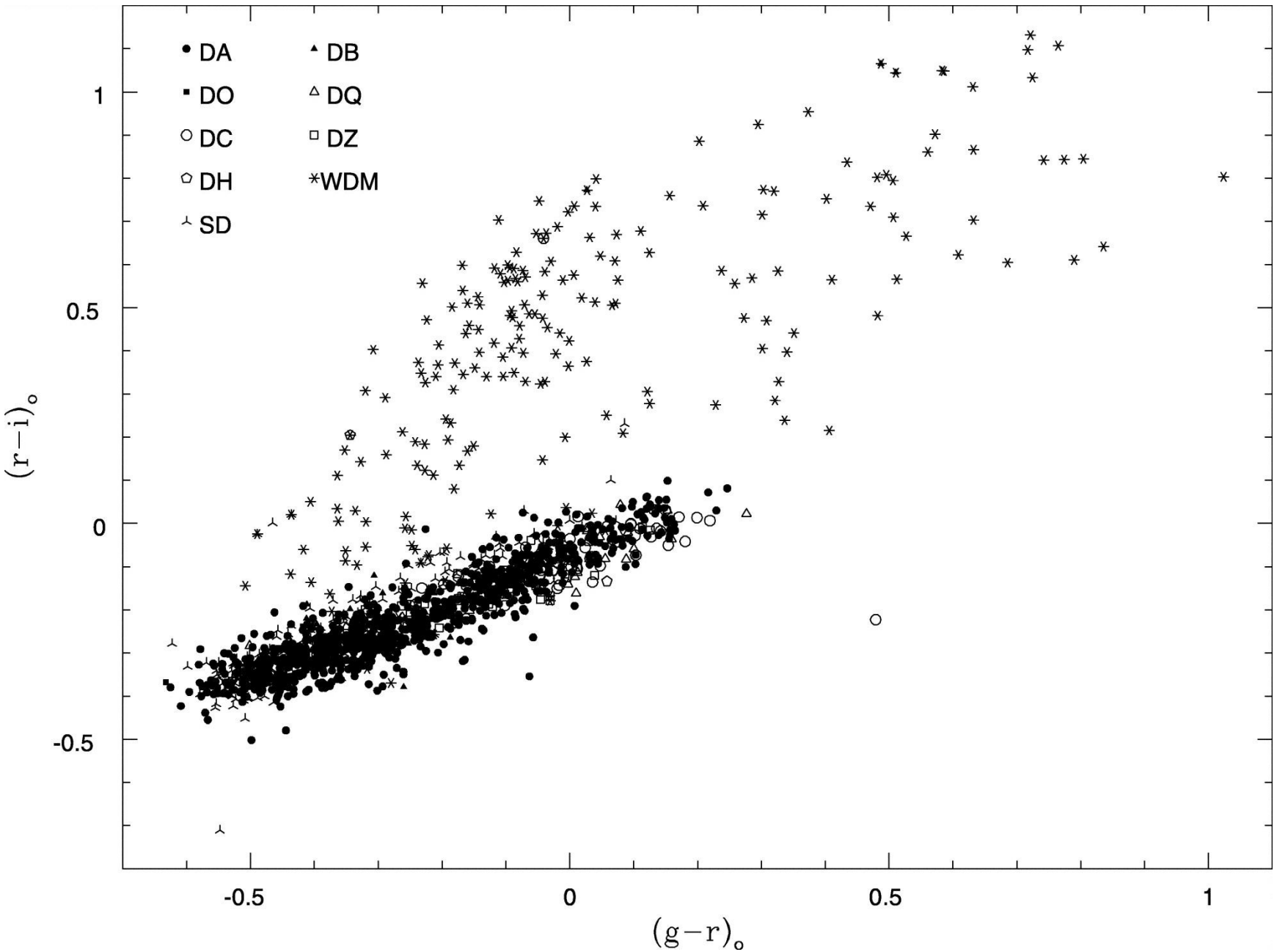
DR1 WDs...



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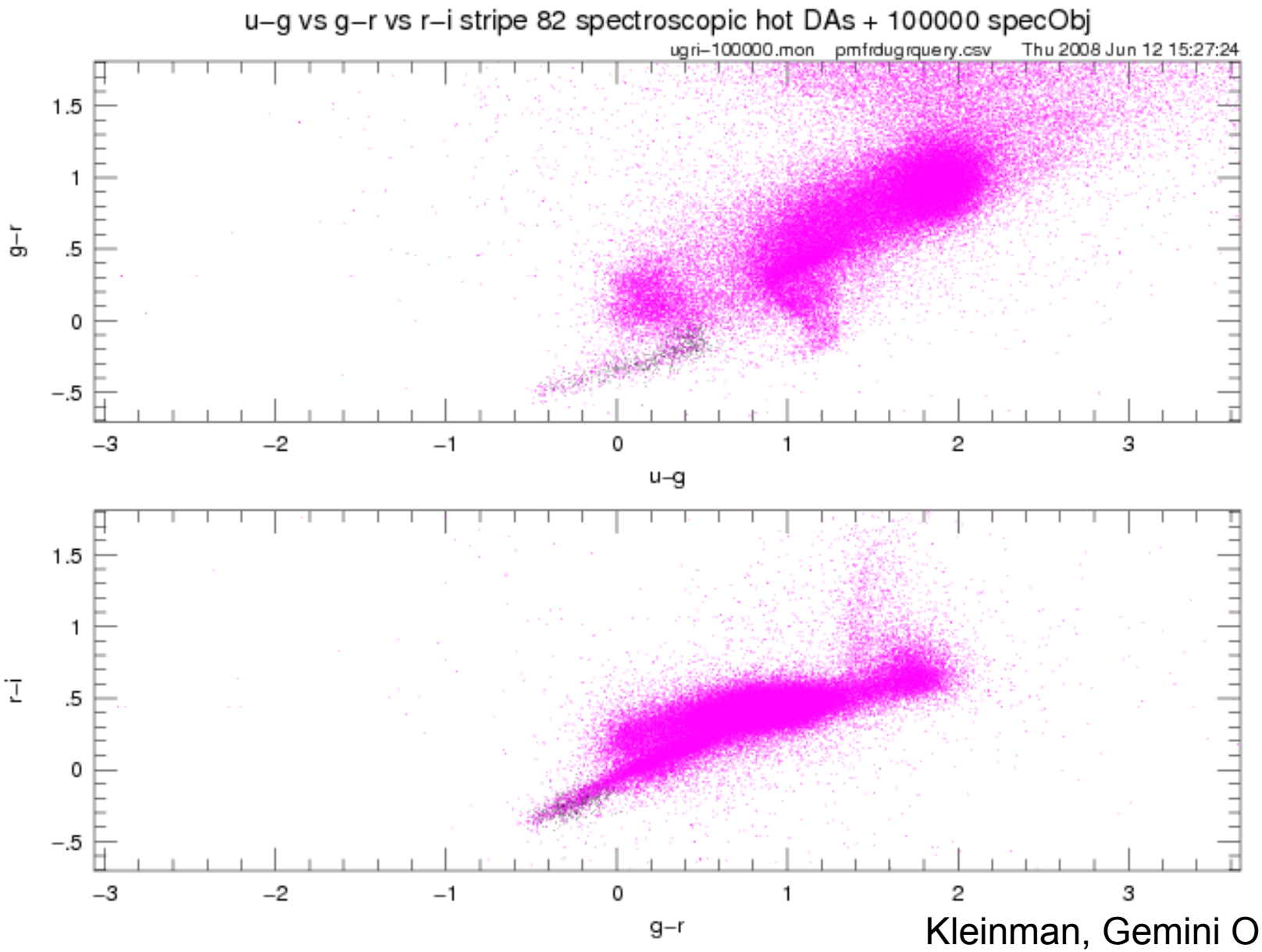
Where is everyone else?



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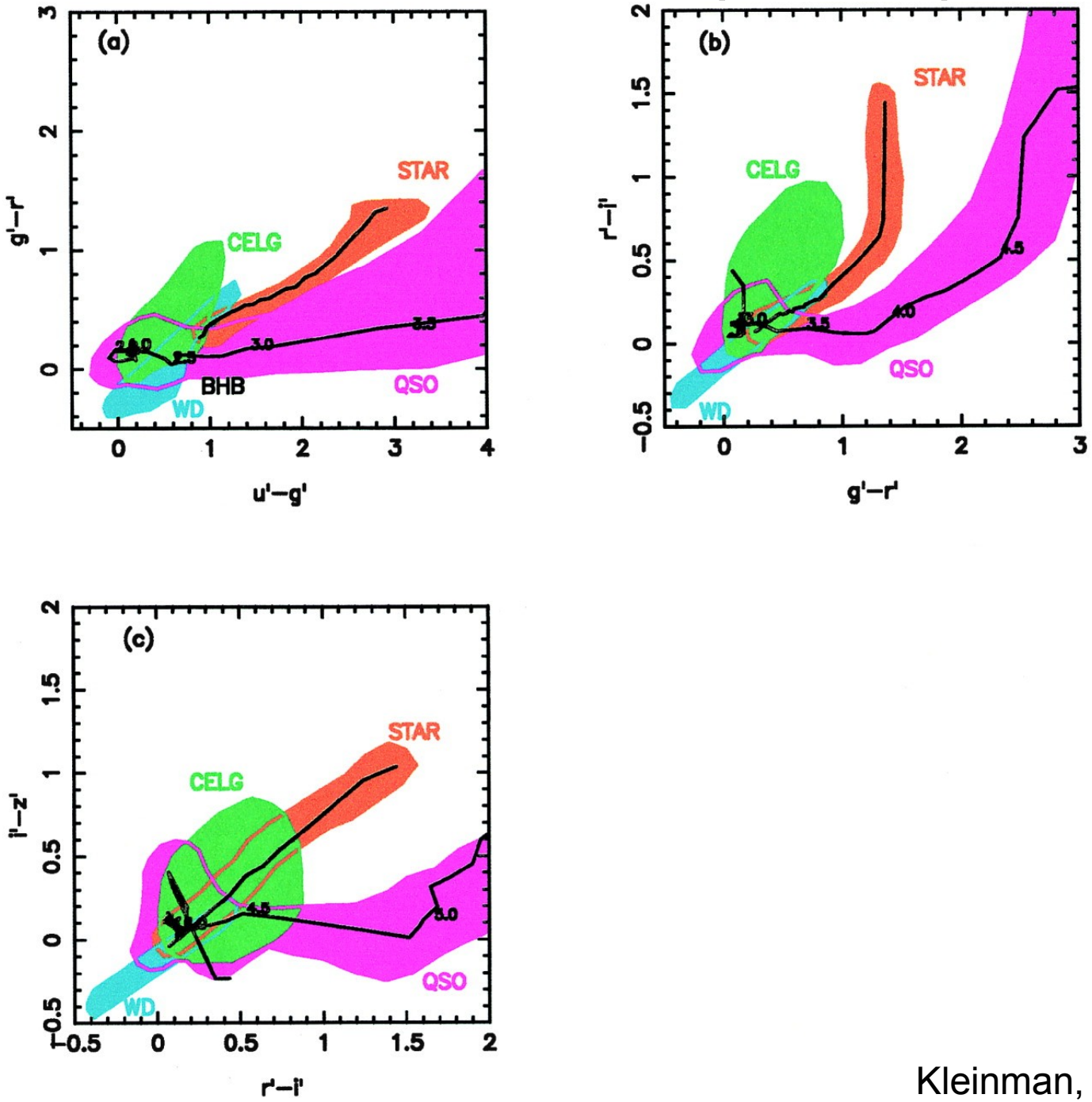
From Fan (1999)



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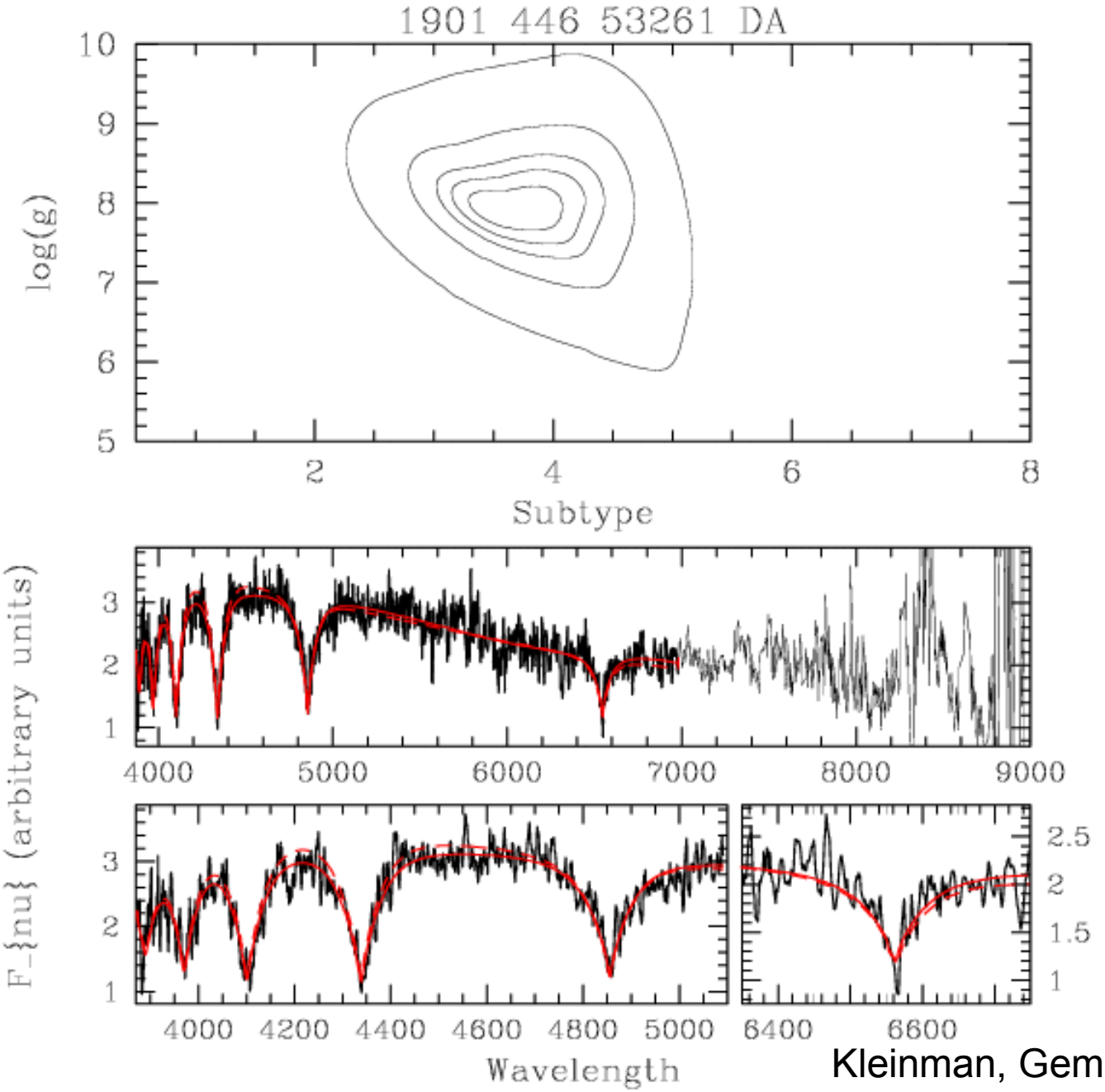
What do they look like?

T=13500K
g=20.4



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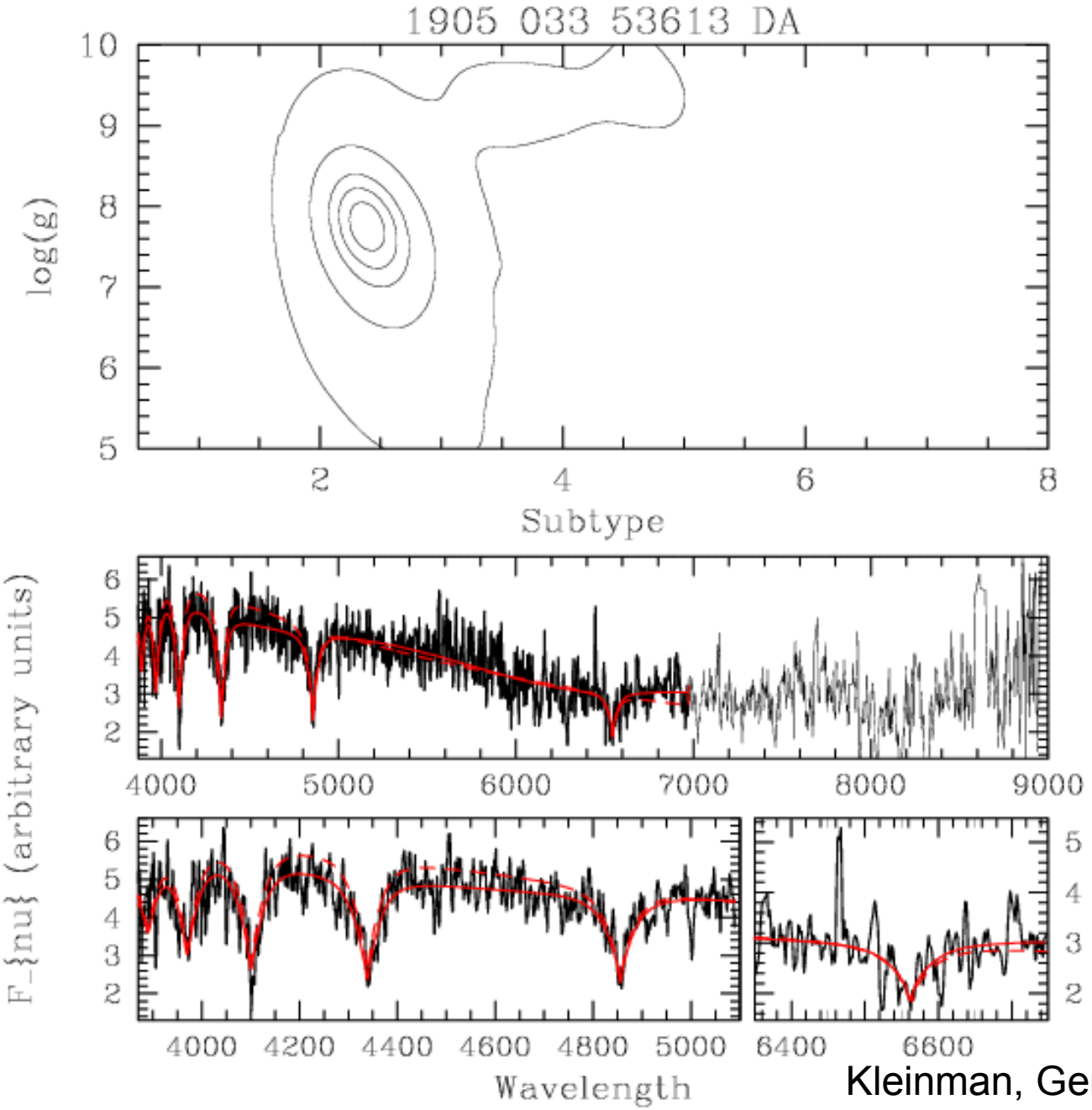
What do they look like?

T=21000

g=19.6



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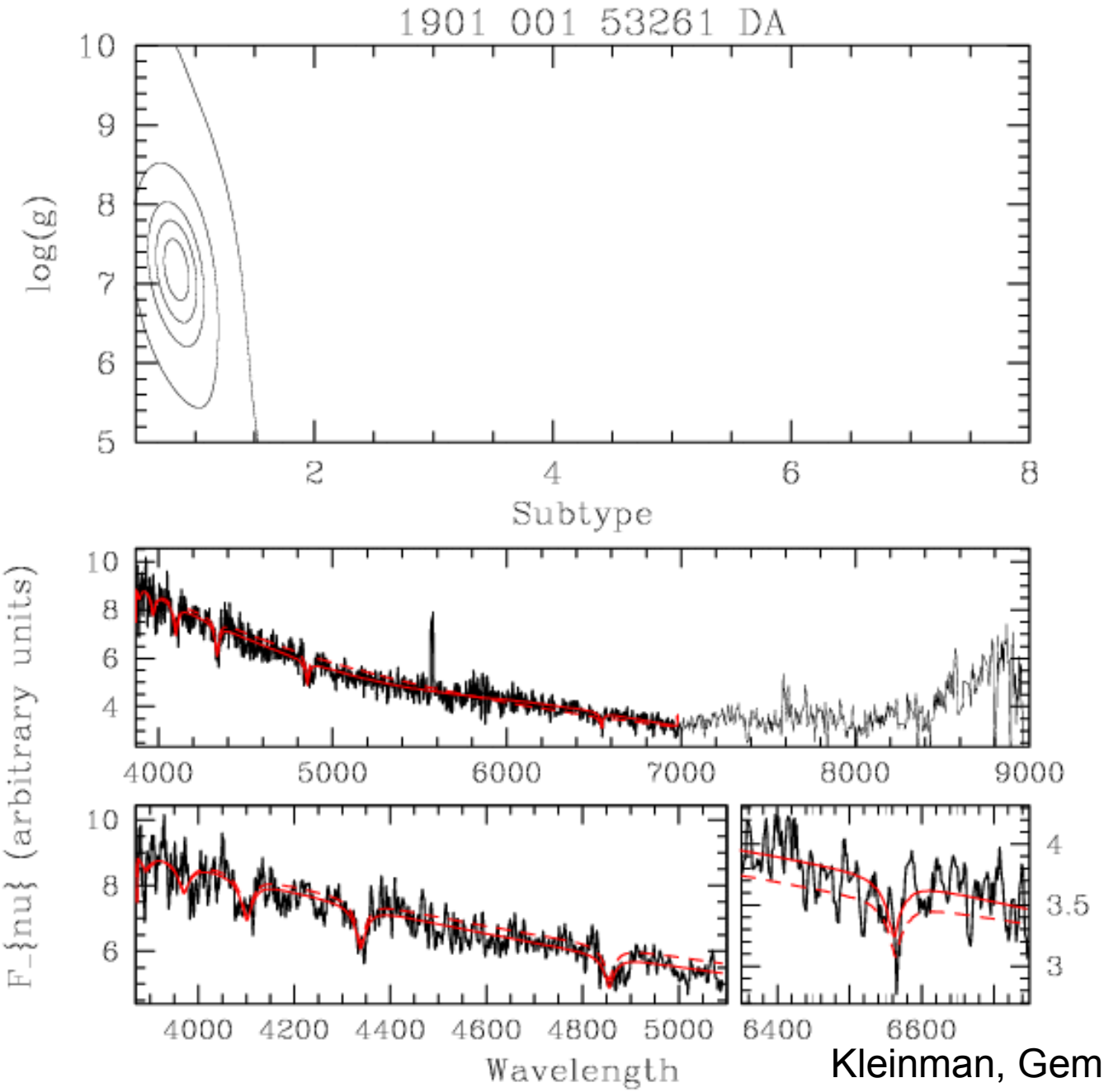
What do they look like?

T=55000K
g=19.6



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