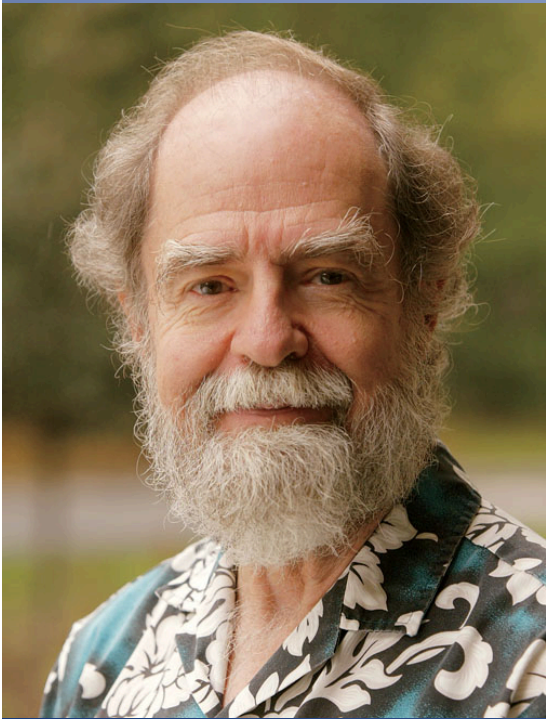


Princeton Science Results from the Apache Point 3.5m Telescope

Michael Strauss

1100 Nights, 20 years

Princeton astronomers have been involved in APO and ARC from the beginning.



Jim Gunn



Jerry Ostriker



Al Sinisgalli

90+ papers, 11 PhD Thesis students

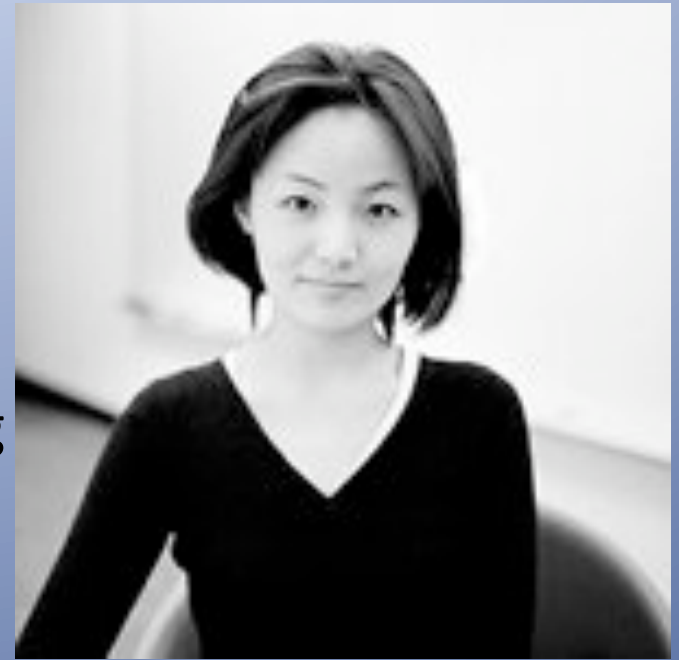


Tomislav Kundic
(with Ed
Turner), Wes
Colley, James
Rhoads, Xiaohui
Fan, Yeong Loh,
Bart Pindor





Joe Hennawi, Xin
Liu, Reina Reyes,
Pete
Pattarakijwanich,
and Chelsea Huang

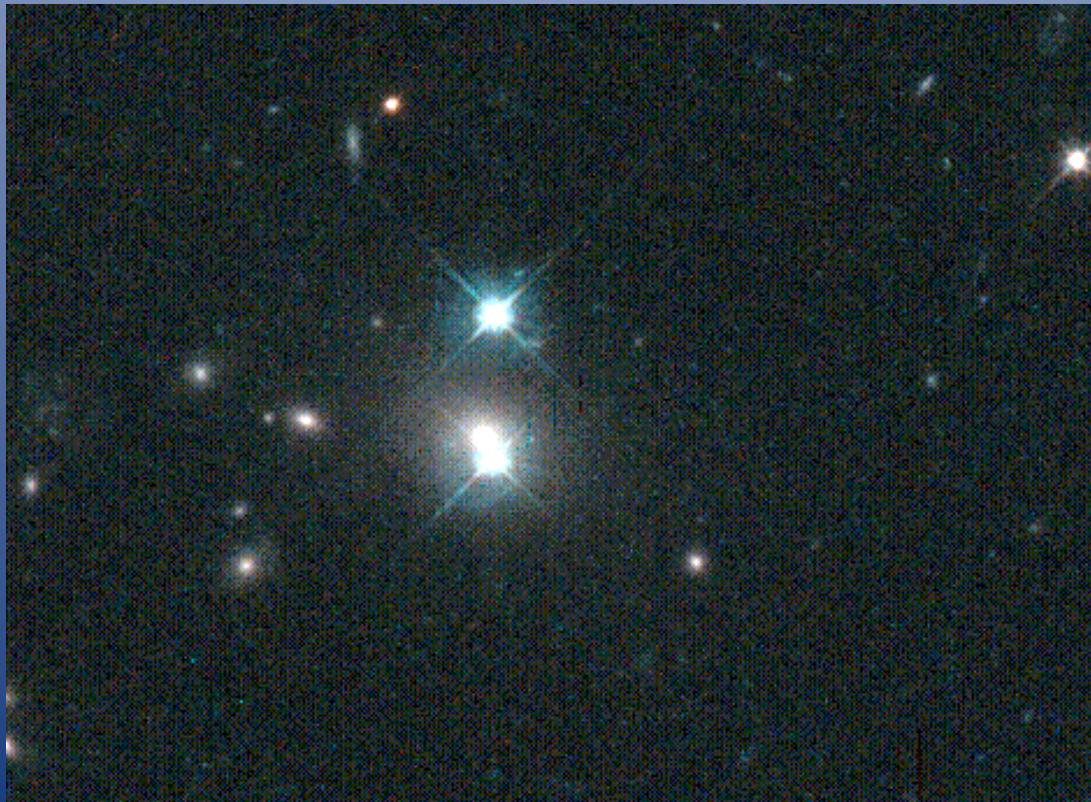


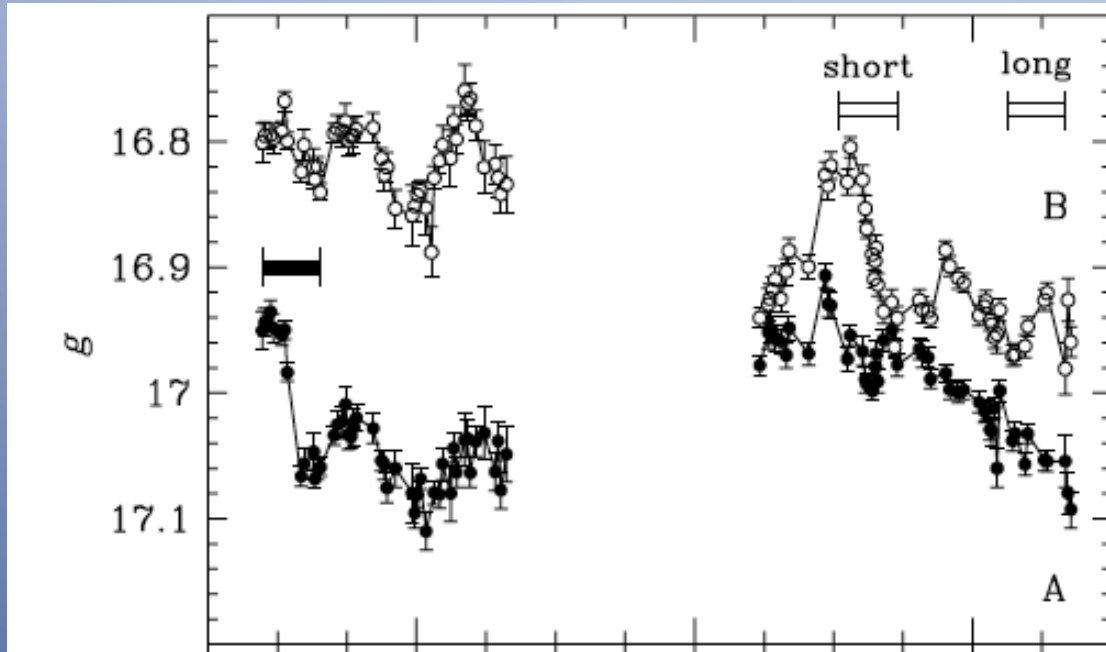
Major Scientific Themes:

- Follow-up of surveys: SDSS!, Palomar Transient Factory, ASAS-SN, HAT, ACT.
- Quasars: Lensed, high redshifts, pairs, absorption lines....
- Dynamical studies of nearby galaxies
- Cool stars and brown dwarfs
- White dwarfs, carbon stars
- Transients and supernovae
- Extrasolar planets

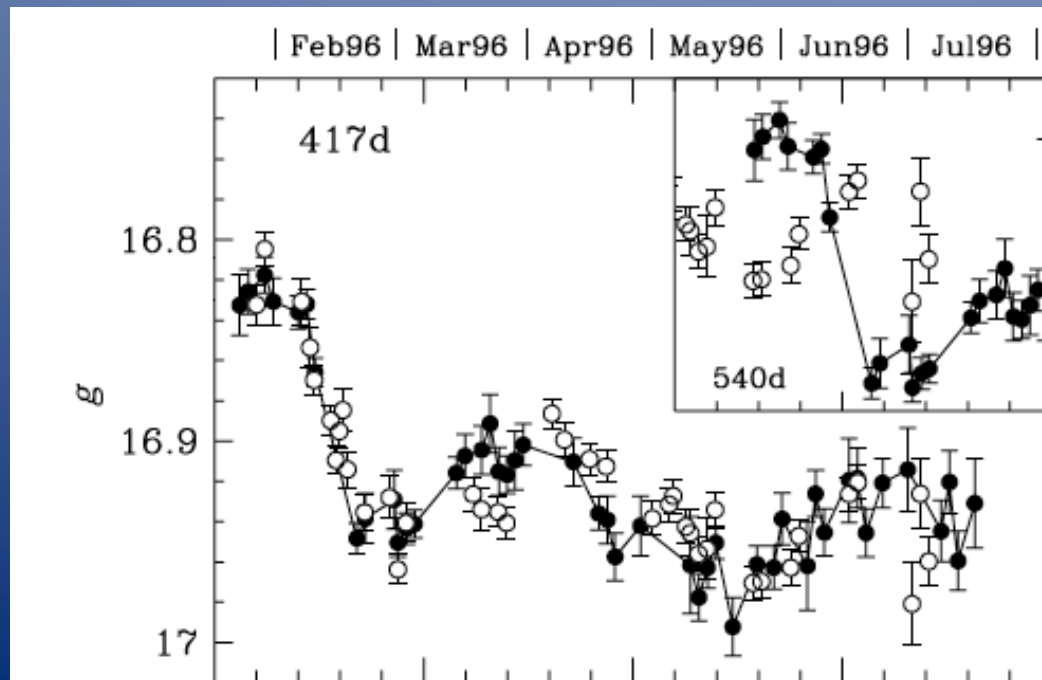
Time Delay in a Gravitational Lens (Kundic et al. 1997)

Gravitationally lensed quasar pair



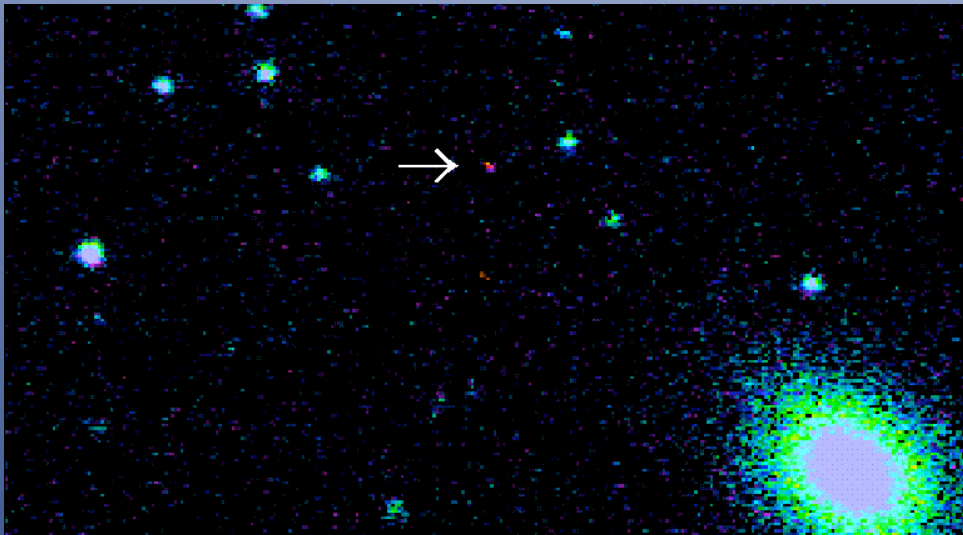


Monitoring the brightness of the two over a year, as observed. Notice that the brightness changes significantly with time.



The two are out of phase by 420 days. This gives a measure of the geometry of the lens, leading to a (correct) determination of the expansion rate of the Universe.

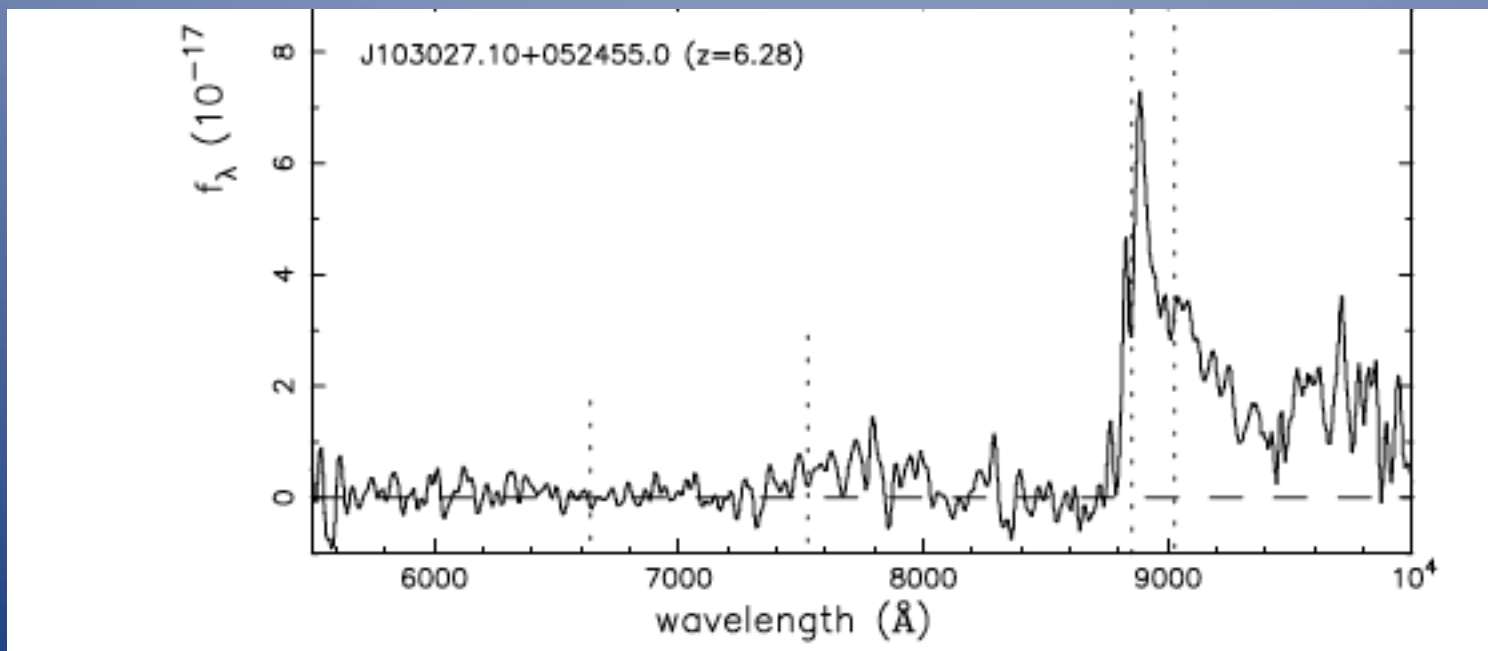
The Most Distant Quasars in the Universe (Fan et al. 2001)



All we had to do was to find the reddest objects in the SDSS....

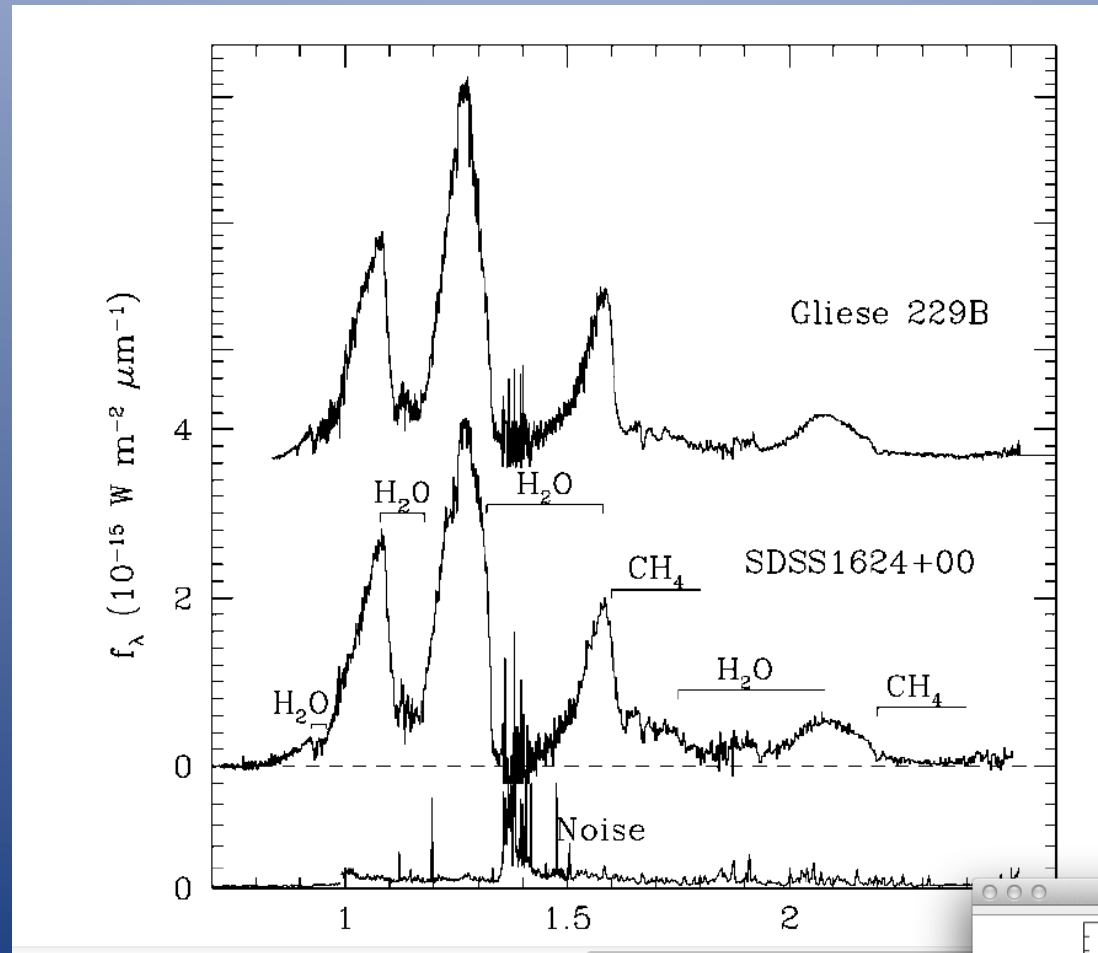
Object	Airmass	UT Time	Exp Time	Filter	Filename	Comments
4:48 16.6 +52:51:50.2	1.56	9:18	1800		10016	We abort this; but this is worth repeating.
						First exposure shows a possible continuum w/ break at $z \sim 6.4$
						Second exposure shows nothing. Is the first exposure spurious? We decide to go on, as weather is poor, but this is definitely worth a second look.

We always seemed to break our redshift record on the crappiest nights...

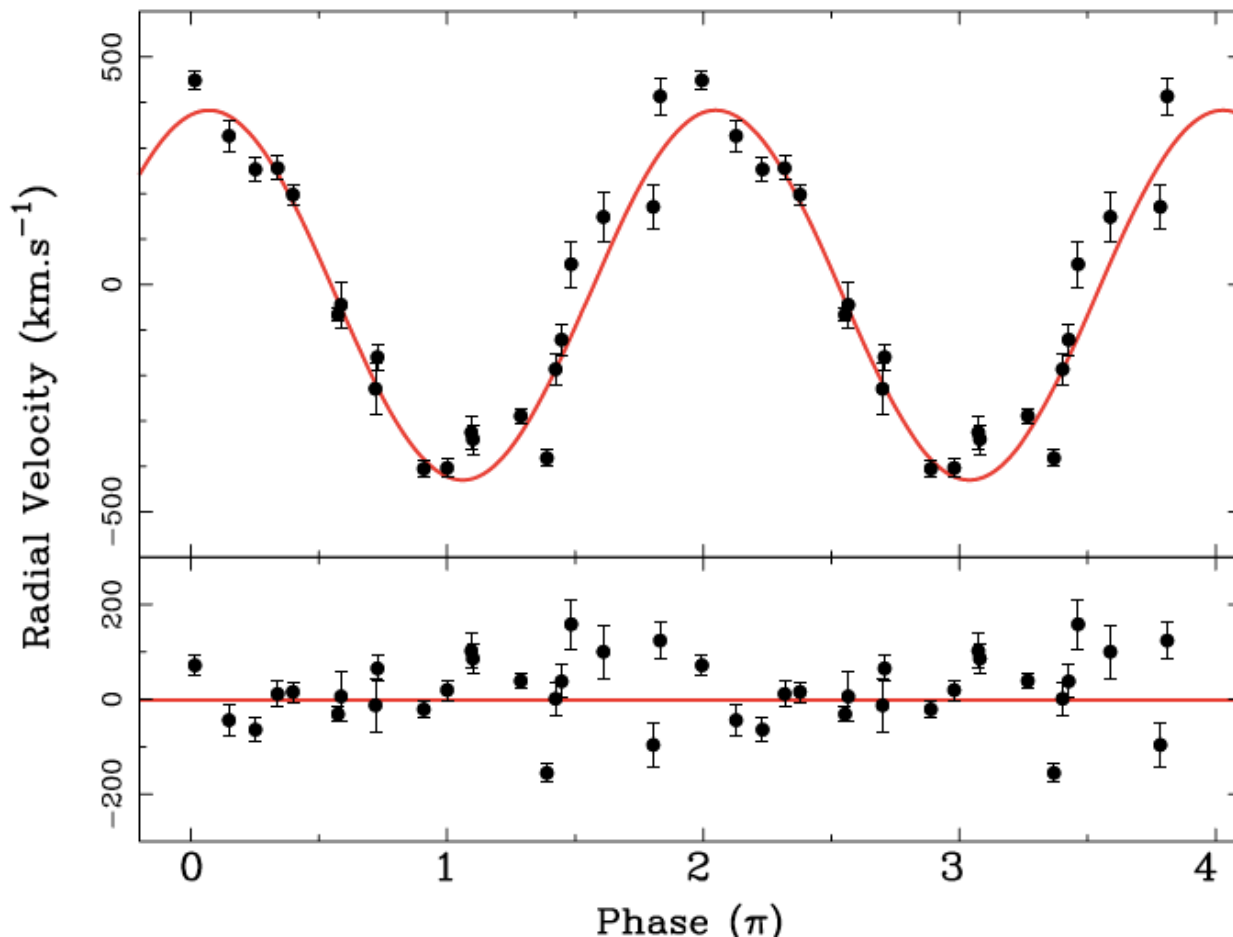


Quasars seen when the universe was 6% of its present age...

The nearest stars in the Universe were often confused with the most distant quasars...



Orbiting Pairs of White Dwarfs: Progenitors to a Supernova Explosion? (Mullally et al. 2009)



Measurements of the motions of the two stars, whipping around each other once an hour at more than one million miles per hour!