
AT20G survey
The Australia Telescope 20GHz
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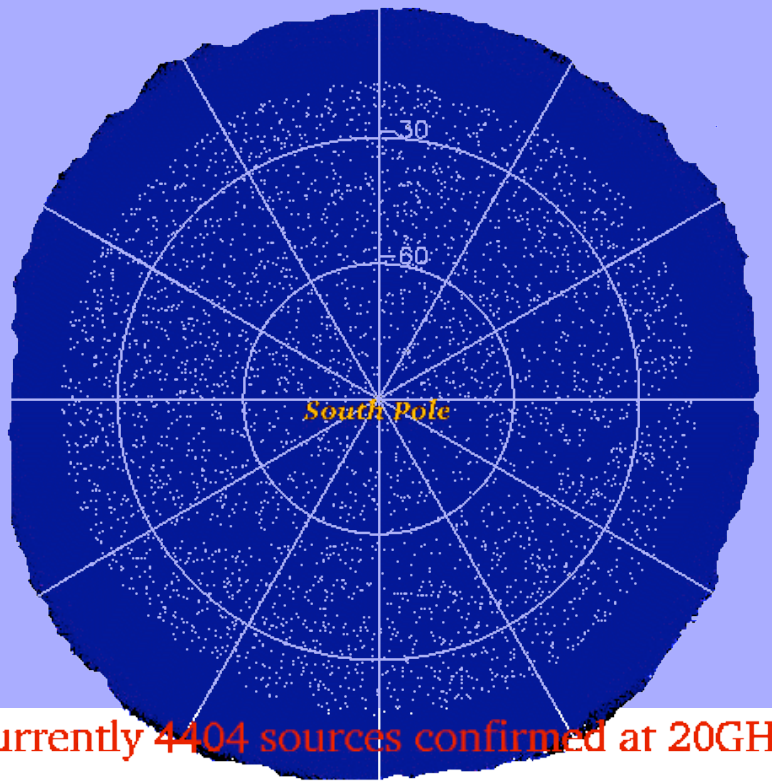
Existing surveys @ high frequencies

SURVEY	Frequency	Source #	Area (sq.deg.)	S_{lim}(mJy)
Taylor et al. 2001	15 Ghz	66	60	20
9C (Waldram et al. 2003)	15 (33) GHz	465	520	25
WMAP (Hinshaw et al. 2006)	23,33,41,61,94 Ghz	323	All Sky	1000
Pilot AT20G (Sadler et al. 2006)	18 GHz	126	1216	100
AT20G	**4.8, 8.6, 20 GHz**	**6000**	**20,000 (50% sky)**	**50**

Surveying problem

- Number of pointings $\propto \nu^2$
- Flux S $\propto \nu^{-0.7}$
- Time per pointing $\propto S^{-2}$
- Survey time $\propto \nu^{3.4}$

1.2 cm survey takes 240 x 6cm survey



Currently 4404 sources confirmed at 20GHz!

The AT20G survey recipe

Our Solution

The ATCA

3 x 22m dishes in compact configuration

2.3' HPBW @ 20GHz

Wide Band analogue correlator

Frequency range 16-24 GHz

Bandwidth 8GHz (8 frequency channels)

High ATCA scan rate: 15 deg./min

No delay correction possible

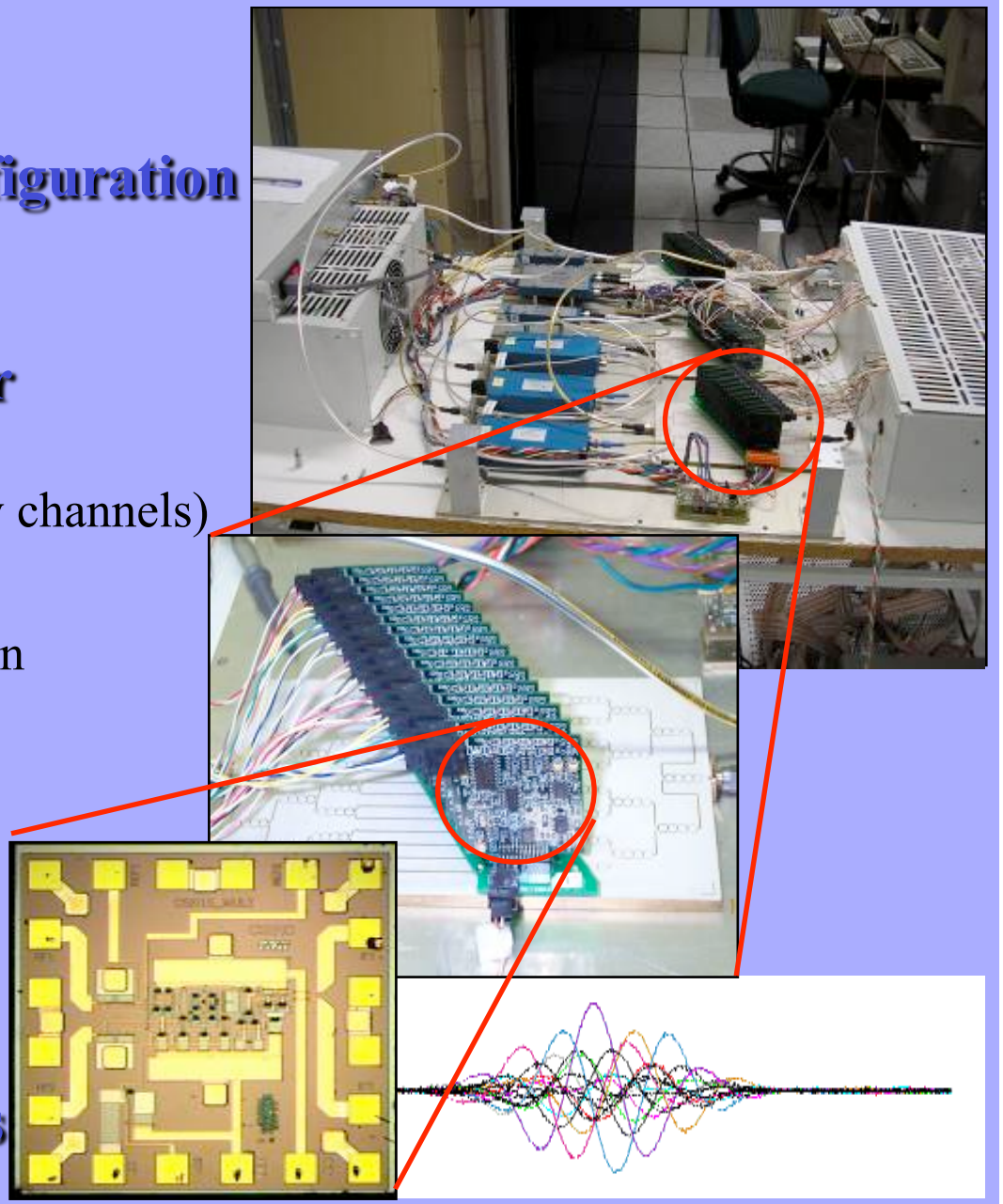
scan along the meridian,

a pointing each 50ms

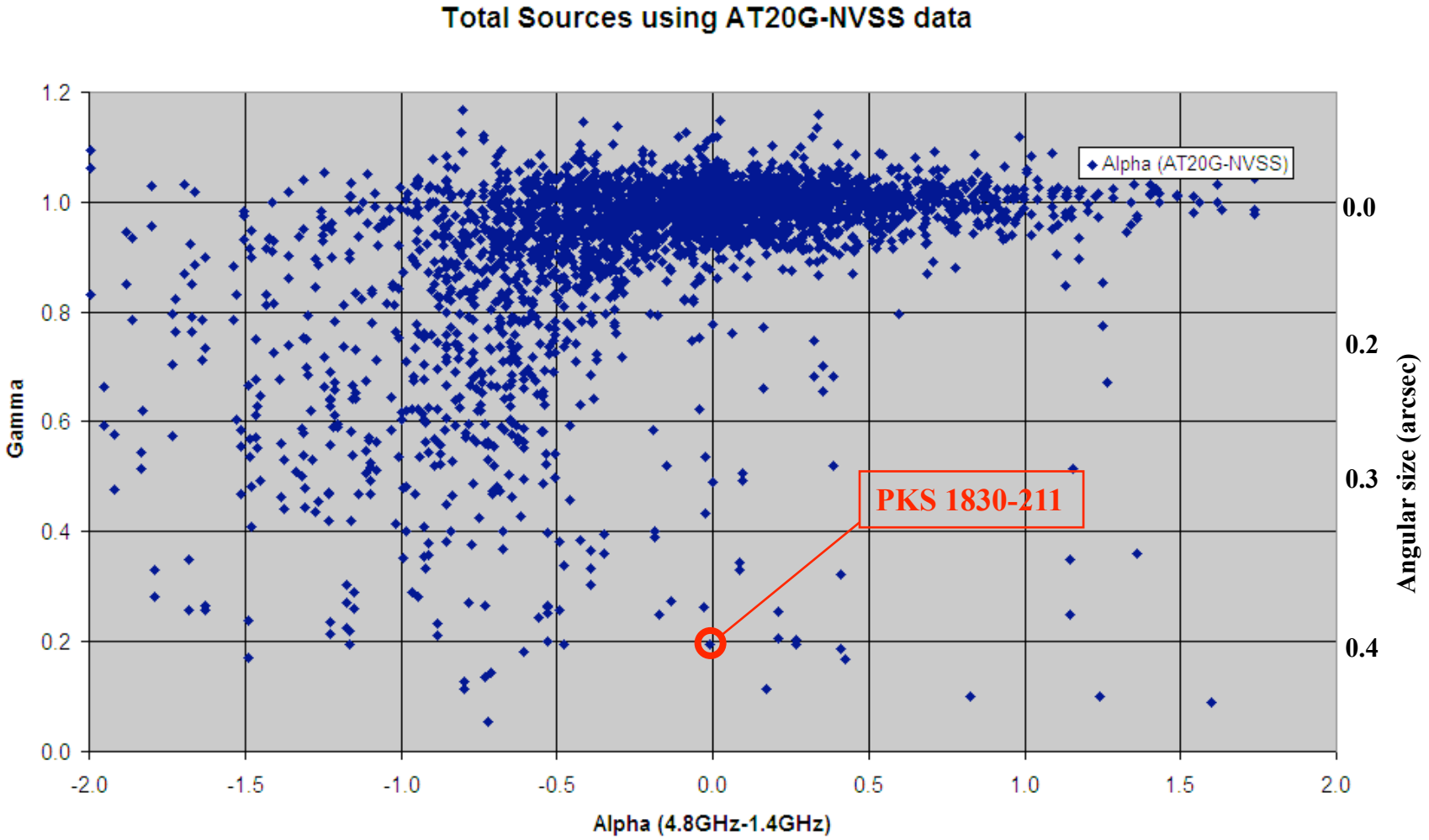
7mJy flux limit

All S-sky in 10(15)° dec regions

includes galactic plane



Size Distribution AT20G sources



Ultra Compact HII Regions

- 46 galactic sources with rising spectra and S_{20}>0.2JY
  - 6 extragalactic, 2 planetary nebula, 38 UC HII