

Young, hidden pulsars

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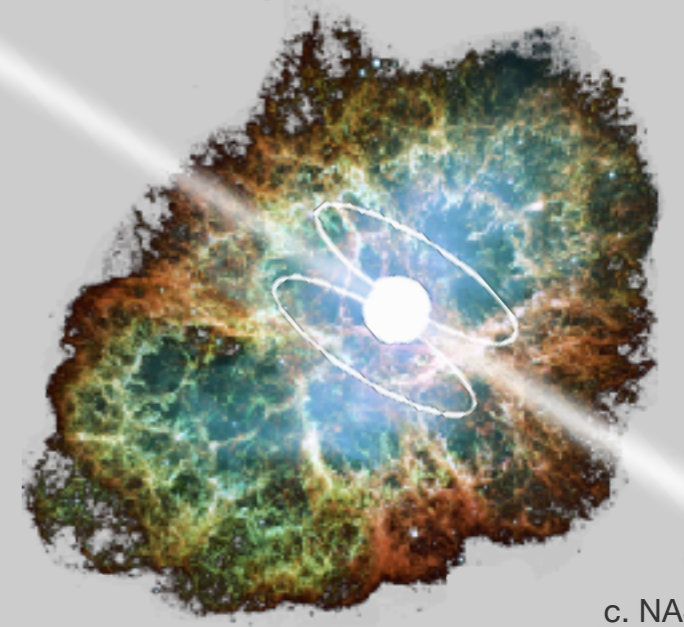
Joeri van Leeuwen

'Missing' pulsars

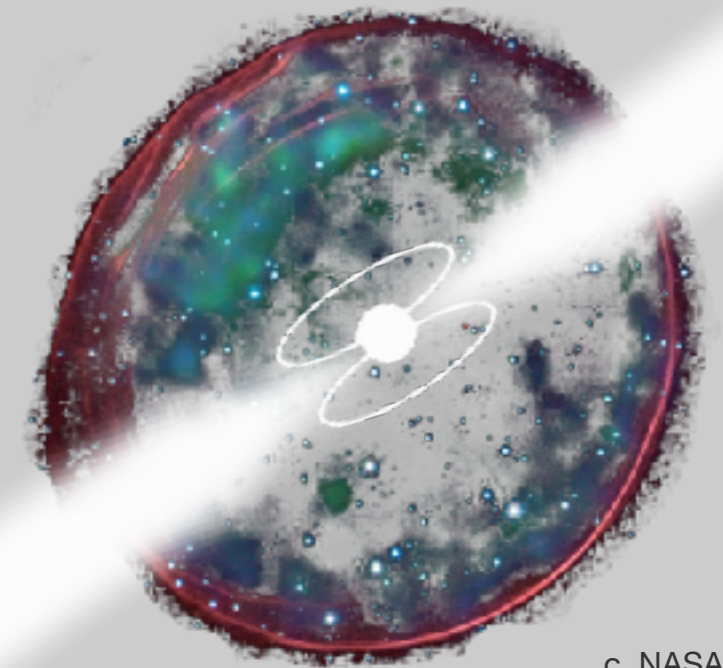
- ★ pulsar in $< 25\%$ of SNRs
- ★ pulsar in $\sim 50\%$ of PWNe

Identify systems to:

- ★ Identify pulsar initial parameters
- ★ Study SN explosion mechanism



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Spectral behaviour

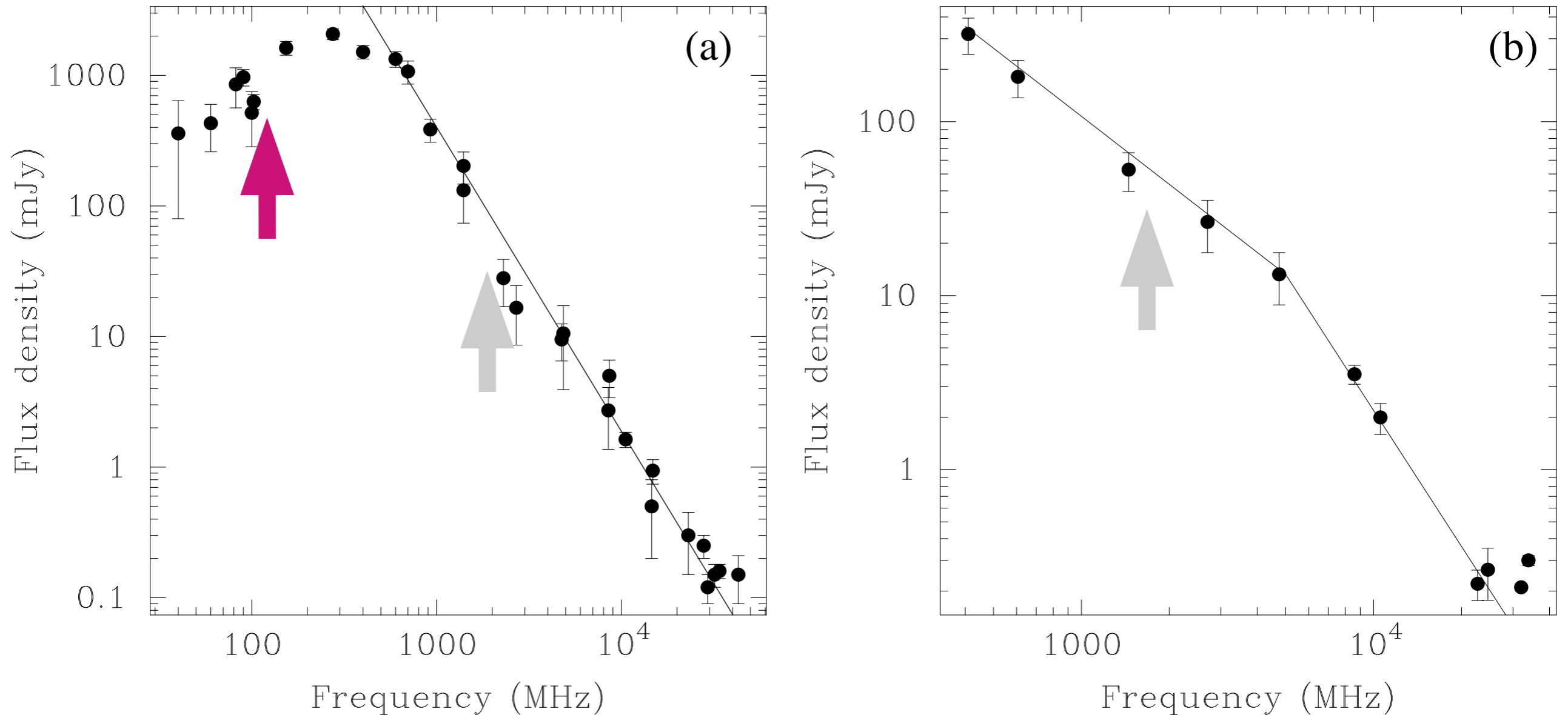
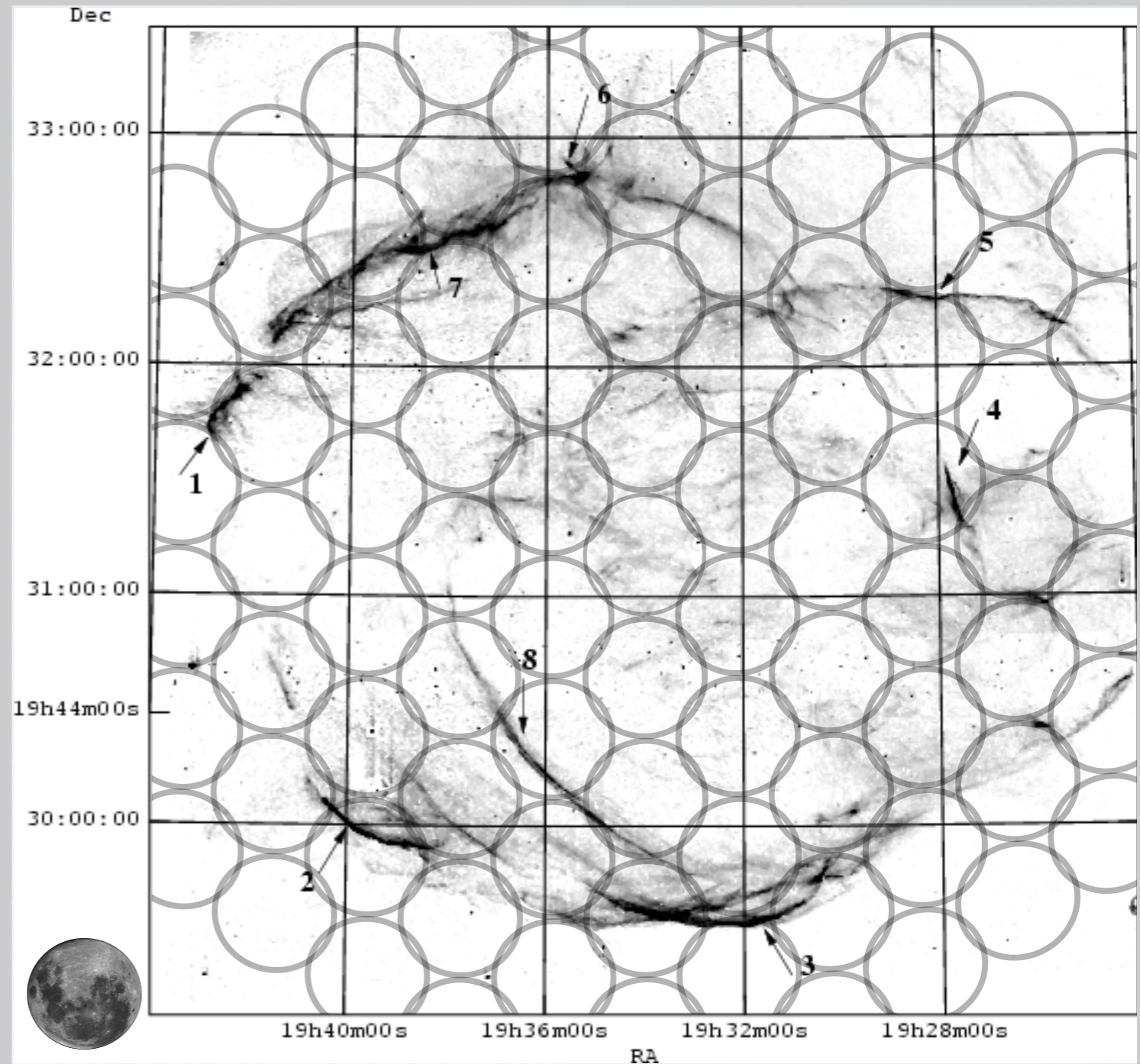


Fig. 1.4. Sample flux density spectra for two pulsars showing different types of spectral behaviour. (a) A low-frequency turnover in PSR B0329+54. (b) A broken power law fit and possible high-frequency turn-up in PSR B1929+10.

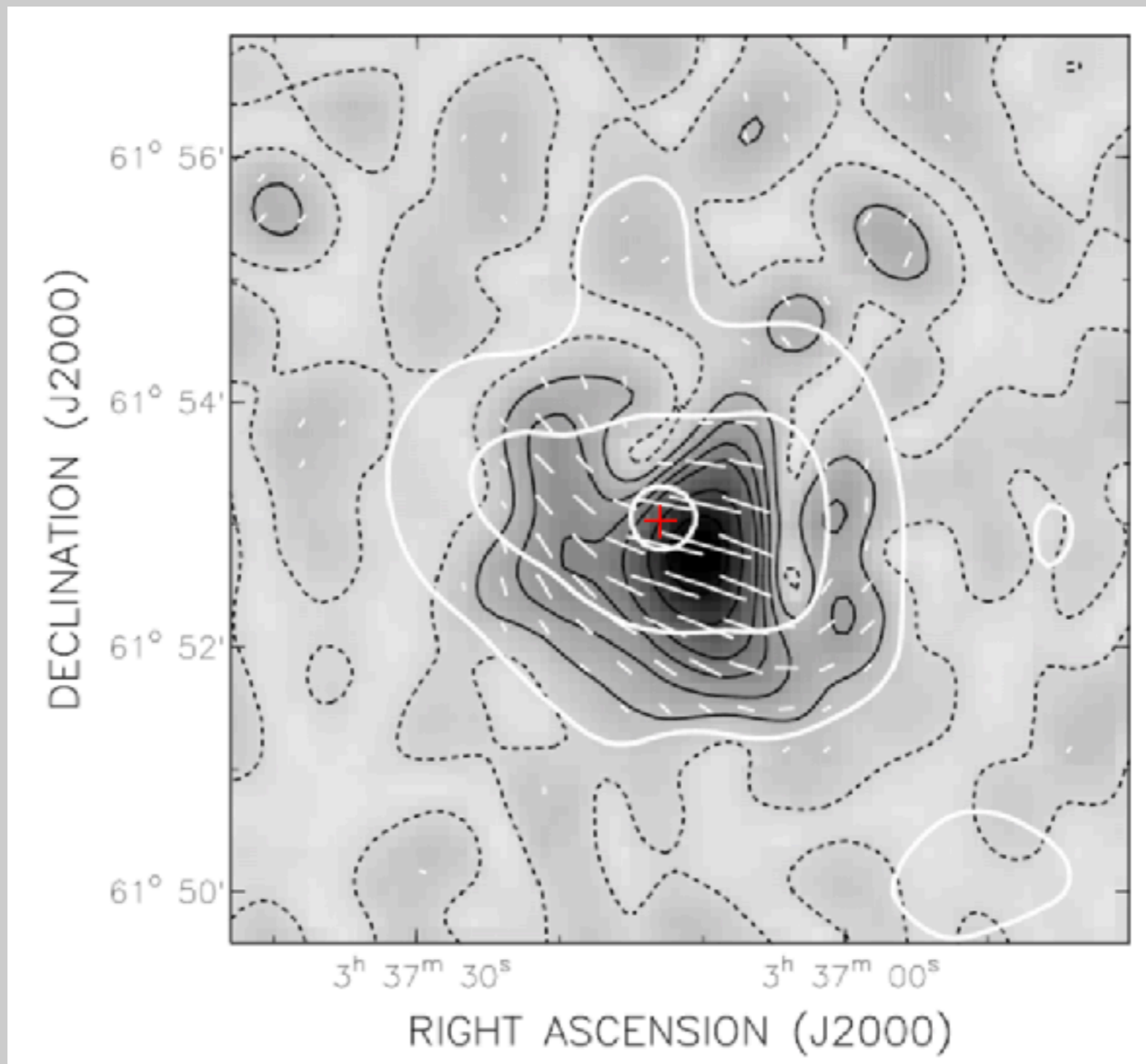
SNR G065.3+5.7

- ★ Now cover full remnants
- ◆ Run-away pulsars

- ★ 5 x 4 degree
- ★ Previously only inner 12% searched



PWN G141.2+5.0



Reynolds & Borkowski 2016

PWN G141.2+5.0

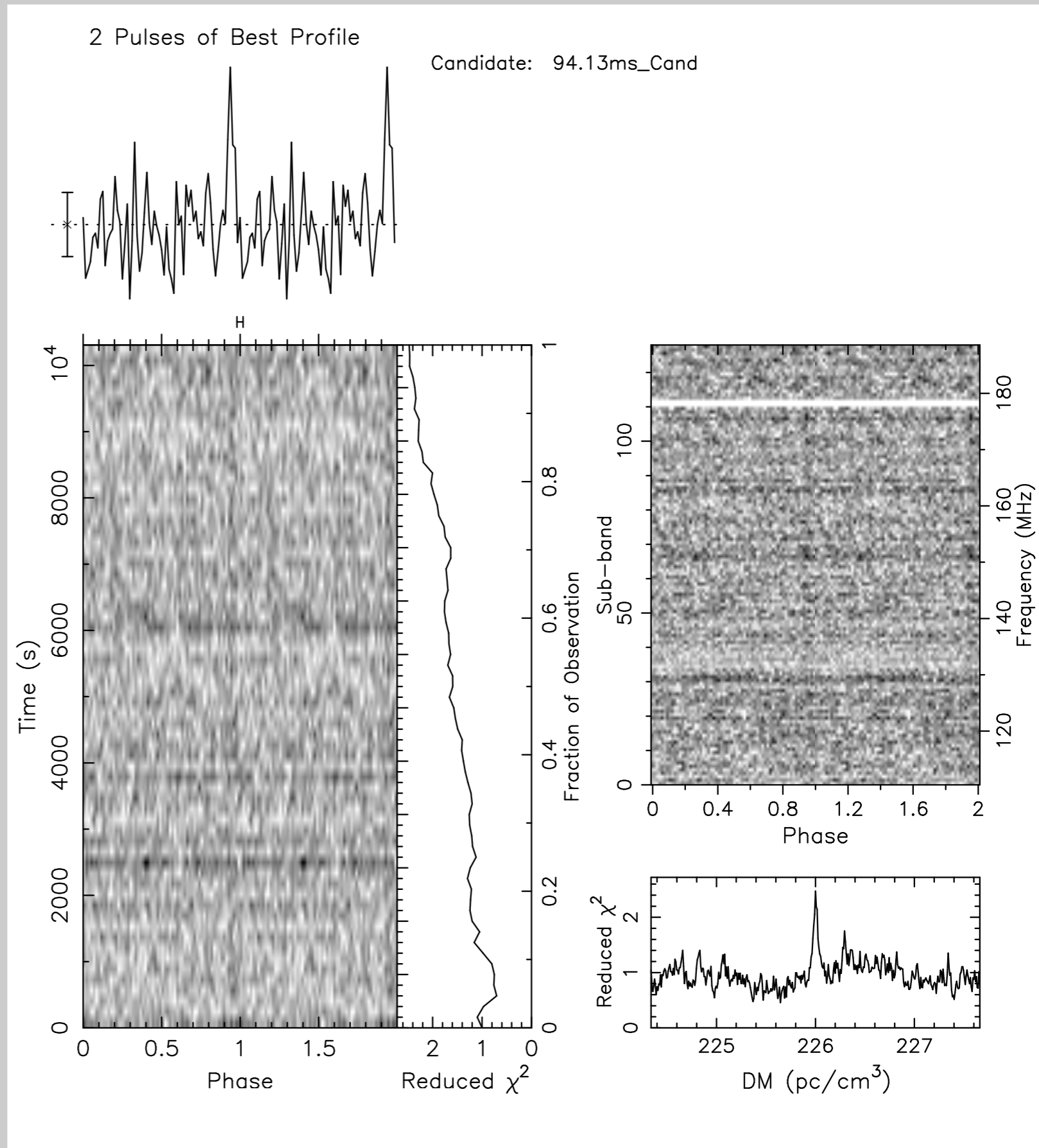
★ $P = 94$ ms
 $DM = 226$ pc cm⁻³
(2x expected)

★ $S = 25$ mJy

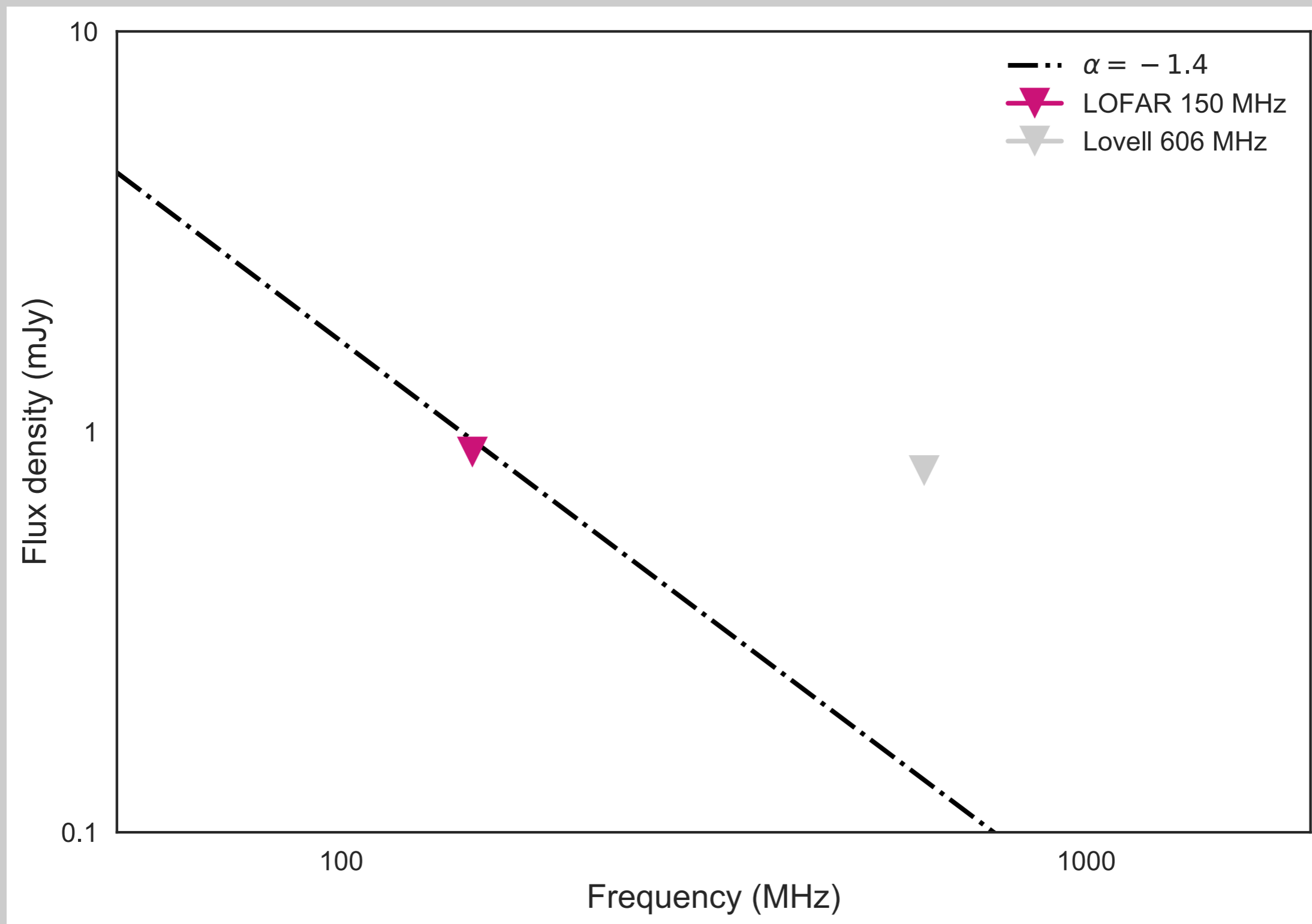
Reobservations:

- ★ $S_{lim} = 0.3$ mJy
- ★ Increased scattering?
- ★ Mode-switching pulsar?

Straal & van Leeuwen, in prep.

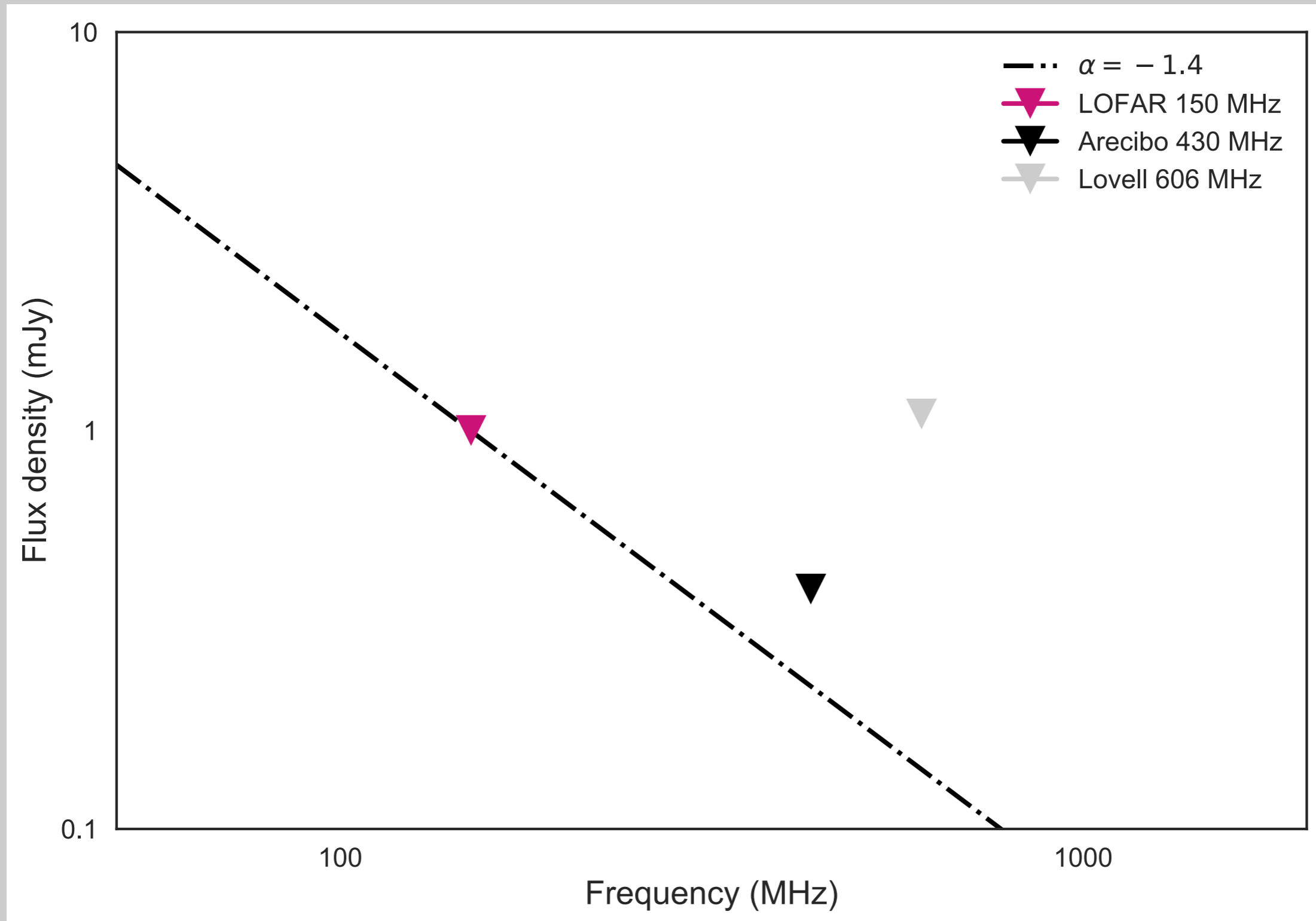


SNR G093.3+6.9 — Upper limits



Straal & van Leeuwen, in prep.

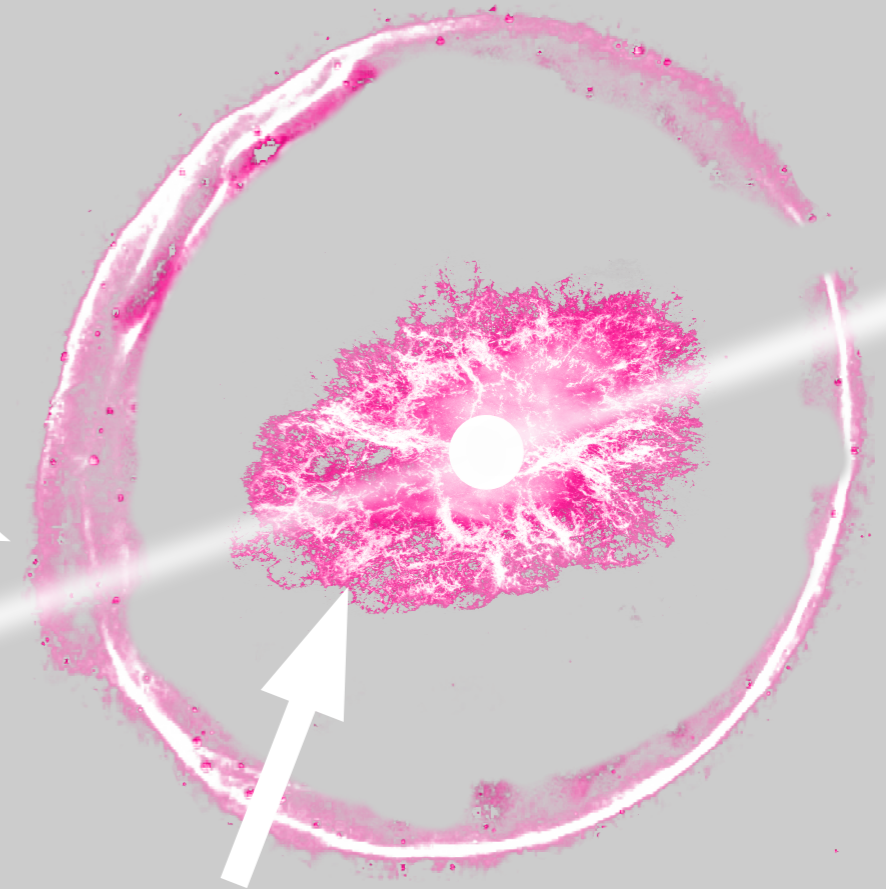
SNR/PWN G074.9+1.2 — Upper limits

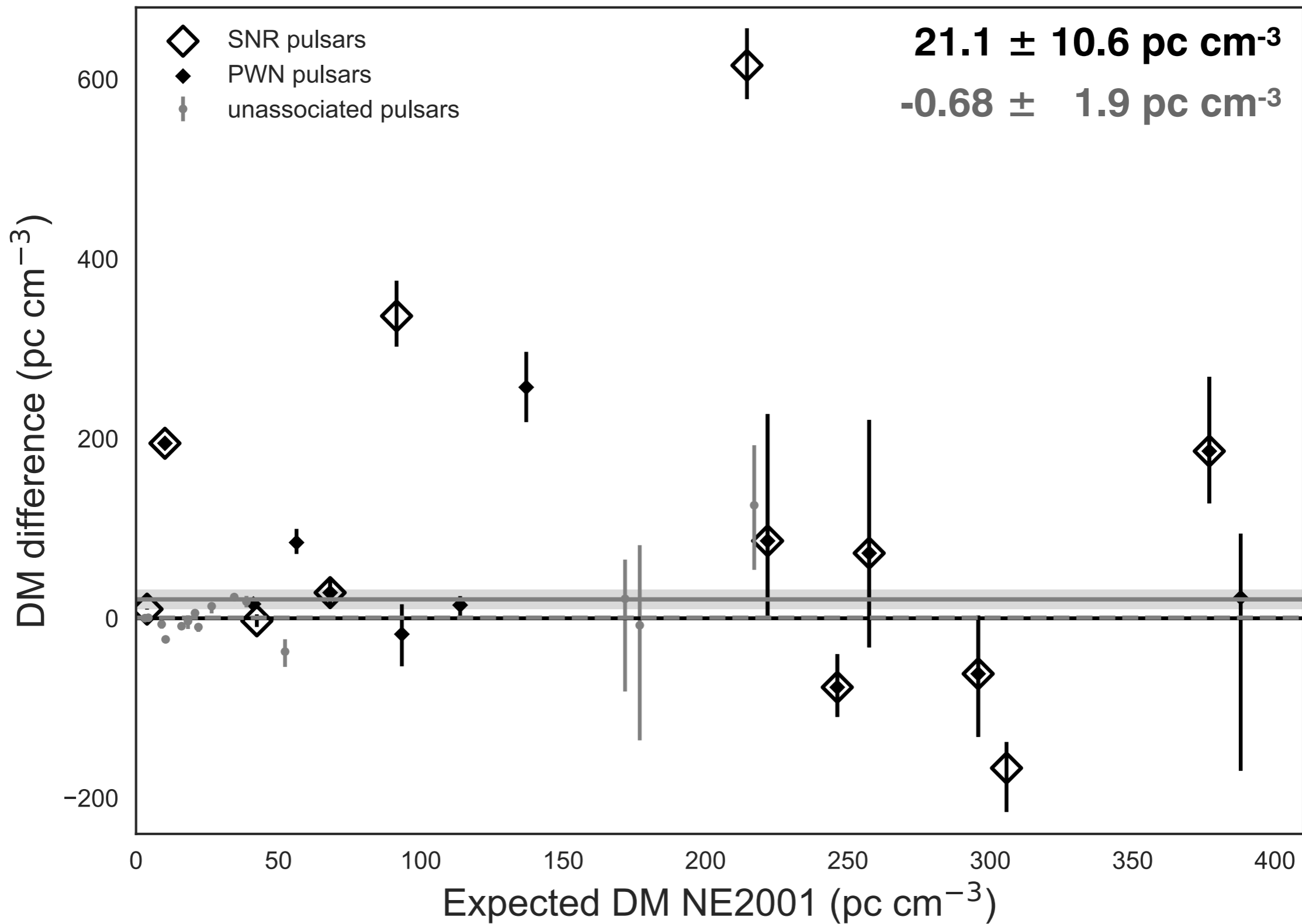


Straal & van Leeuwen, in prep.

Excess dispersion?

- ★ Compare Observed DM to NE2001 DM
- ★ HI or parallax distances
- ★ 2 samples:
 - ◆ Associated (SNR/PWN)
 - ◆ Unassociated



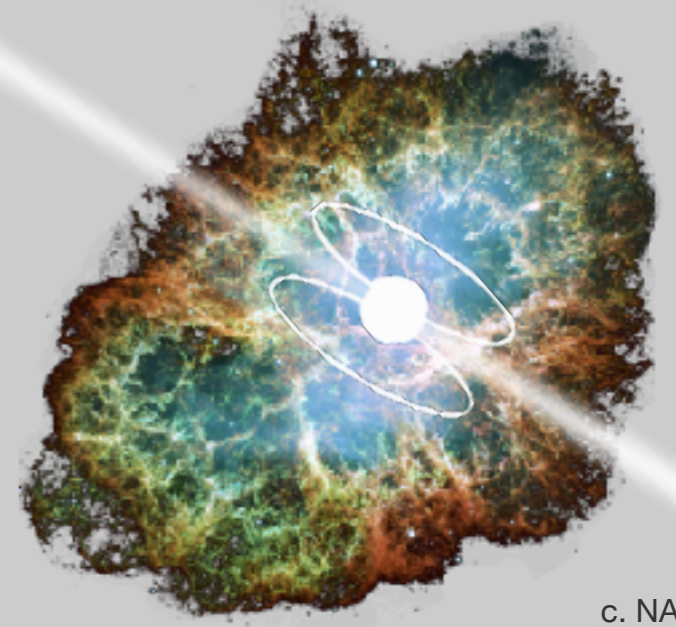


Straal et al. submitted

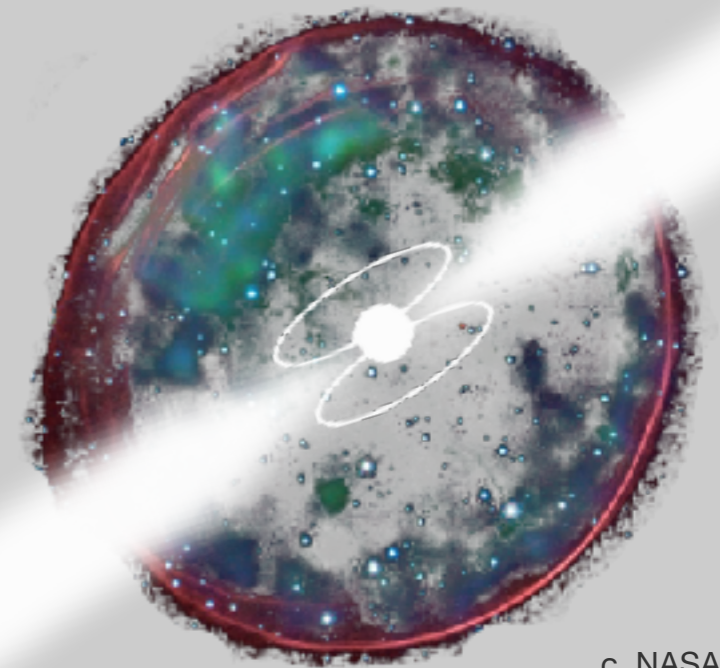
Recap

- ★ New upper limits for 7 SNRs/PWNe
 - ◆ beaming fraction not significantly increased
- ★ 1 PSR candidate — enhanced scattering?

- ★ PWN and SNR can contribute to the DM
- ★ $DM_{\text{excess}} = 21.1 \pm 10.6 \text{ pc cm}^{-3}$
 - ◆ Incidental larger which can obstruct detection



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