

Persistent and Transient Blank Field Sources

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Dim Isolated Neutron Stars

(DINS)

- Residual Internal Energy
- Interaction with the surrounding
- $N \sim 10^8 - 10^9$

ROSAT – DINS

- Blank Field Sources
- Low X-ray Luminosity: $L_x \sim 10^{30}$ erg/s
- $T < 100$ eV
- $d \sim 100$ pc
- $P \sim 5 - 10$ s
- Absorption lines < 1 KeV

Outline of the Contribution

- BFS in the ROSAT HRI Wavelet Catalogue
(Chieriegato et al., 2005, A&A 444, 69)
- Progress in ROSAT BFS
- Transient Blank Field Sources
- Future perspectives

BFS from HRI Catalogue

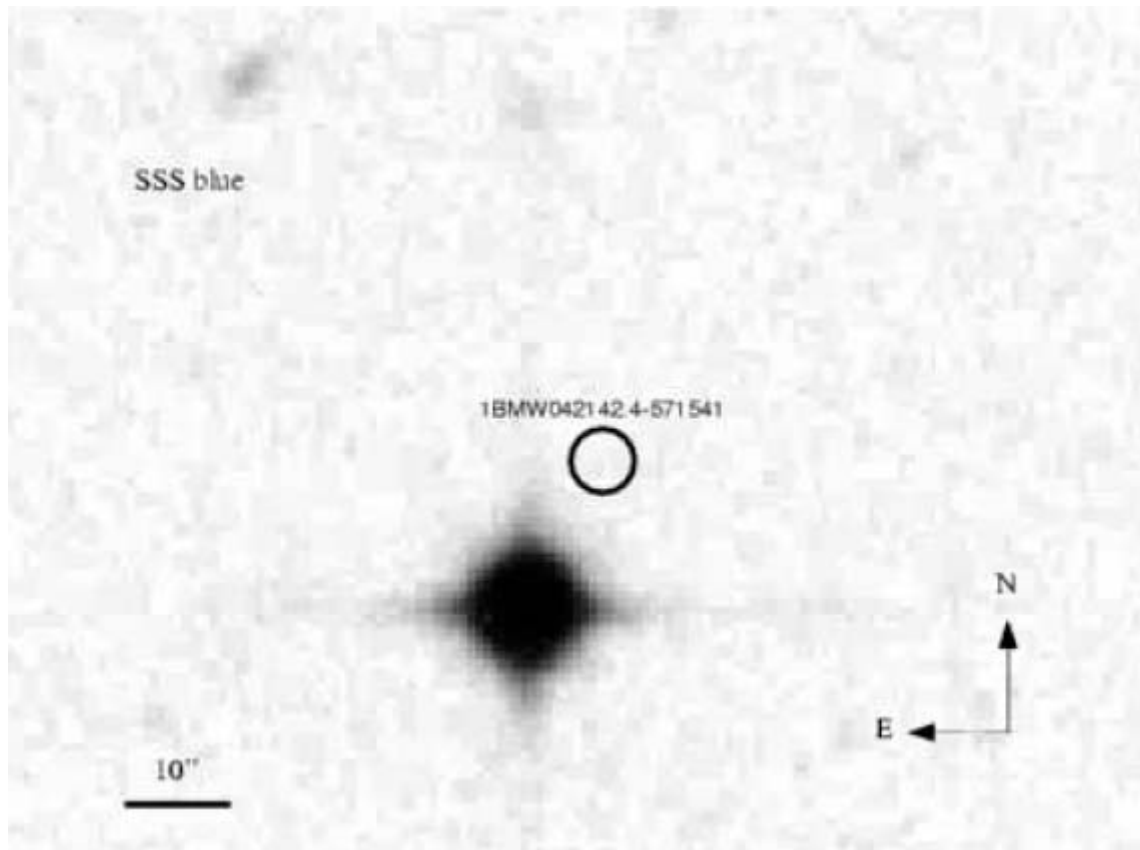
- Blank Field Sources
- $f_x > 2.7 \times 10^{-13}$ erg/s
- $N_{\text{ph}} > 25$

BFS – HRI

Source	Flux 10^{-13} erg $\text{cm}^{-2}\text{s}^{-1}$	Prob. σ	Cts	f_x / f_{opt}	Opt. σ
0421-51 persistent	6.5	14.0	742	>141	5.3
1357+18 transient	3.5	4.2	112	>47	6.3
2007-48 transient	3.0	4.3	55	>65	5.2
0433+15 transient	2.9	4.2	34	>40	4.9

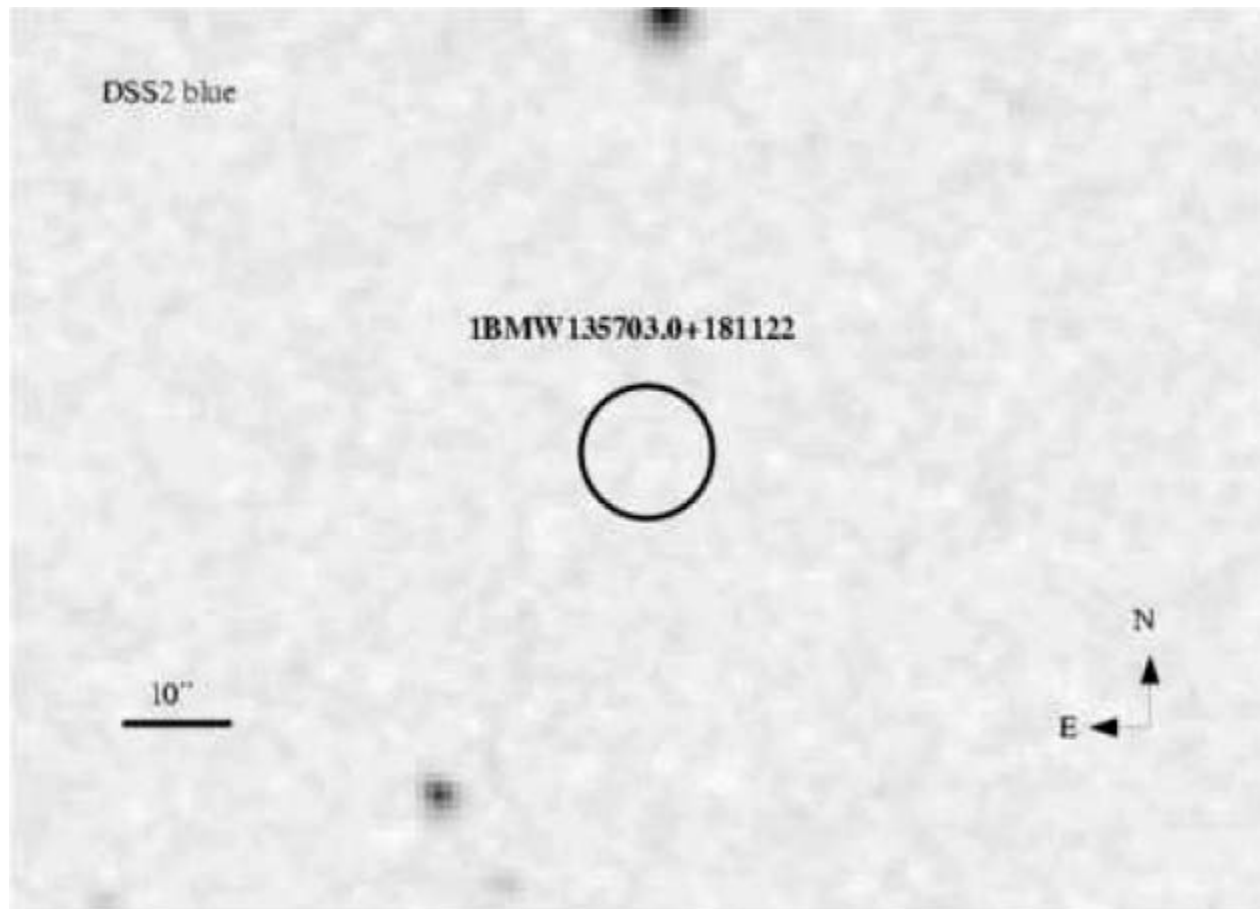
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X-ray position and blue image



1357+ 18

X-ray position and blue image



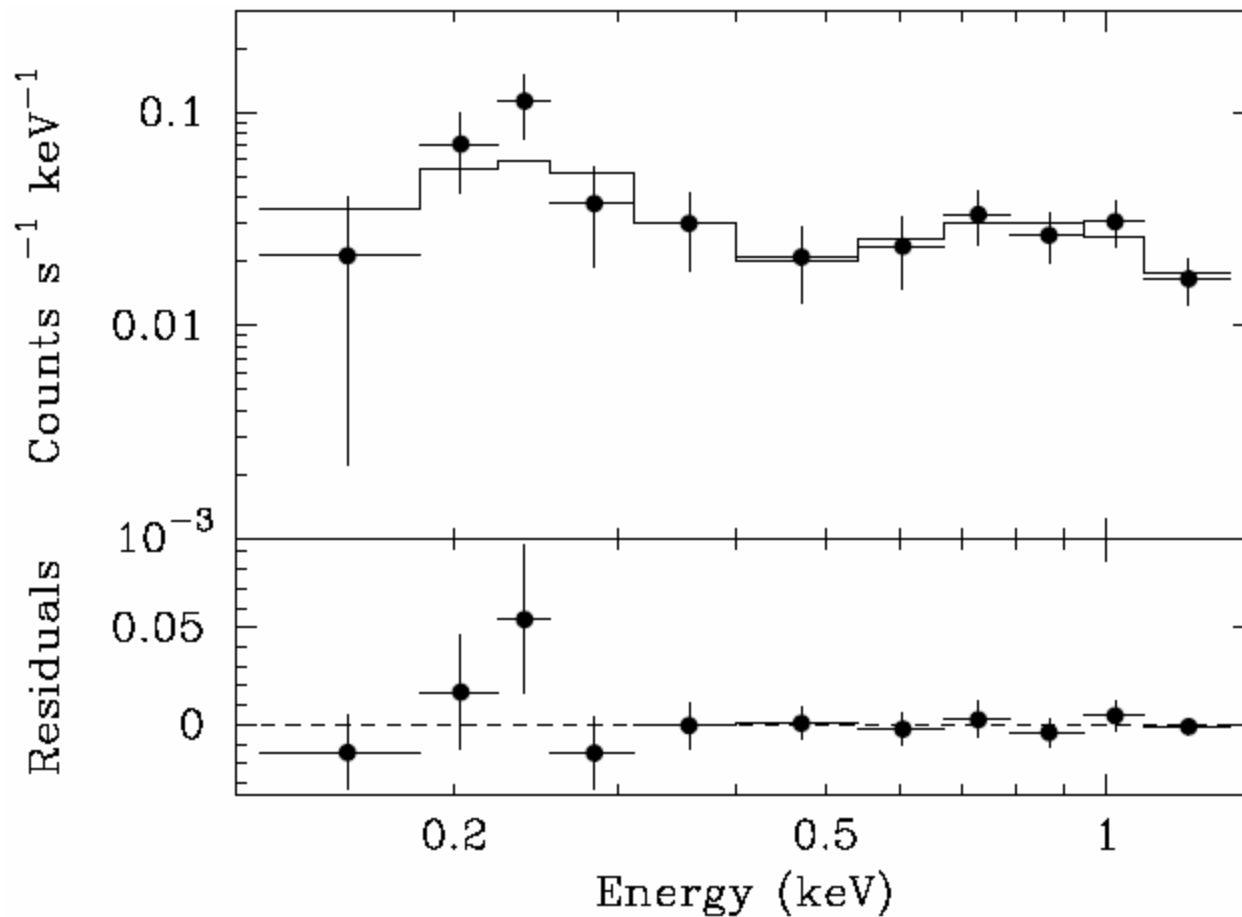
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Spectral fits for PSPC observation

Model	N_H	kT / Γ	Flux(0.1-2 keV)	χ^2_{red}
	10^{20} cm^{-2}	keV	10^{-13} cgs	
B.body	$0^{+0.3}$	$0.19^{+0.02}_{-0.02}$	5.6	1.4
B.body	1.8(frozen)	$0.15^{+0.02}_{-0.01}$	6.9	1.9
Pow.-law	$1.8^{+1.8}_{-1.4}$	$1.8^{+0.7}_{-0.6}$	6.5	1.3
Pow.-law	1.8(frozen)	$1.8^{+0.2}_{-0.2}$	6.5	1.2
Bremss.	$1.3^{+1.0}_{-0.9}$	$1.46^{+14}_{-0.77}$	6.2	1.3
Bremms.	1.8(frozen)	$1.03^{+0.49}_{-0.25}$	6.2	1.2

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Power law spectral fits for PSPC observation



Progress in BSF – HRI

Reconsideration of 4 sources:

- 0433+15 is a fake
- 1357+18, 2007-48 are not spiky

X-ray (SWIFT – Campana)

- 1357+18 $f_x < 10^{-14}$ erg / s

Optical (WIYN – Orio)

- 1357+18 $R > 23.4$

If the two TBSF were real...

Total Number:

- $T_{\text{HRI}} \sim 3 \times 10^7 \text{ s}$
- $\Omega \sim 0.2 \text{ deg}^2$
- Isotropic N $\sim 10^5 \text{ y}^{-1}$

⇒ Extragalactic: unlikely
Gamma Ray Burst: unlikely

TBSF

Non Collapsed Companions: unlikely

- White Dwarfs
- Neutron Stars

Relation with transient PSR?

Hiccups?

Progress

Search for BFS with $f_x \sim 10^{-14}$ erg / s

(Chandra, XMM, SWIFT)

X- and optical archives

What we expect (dreams?)

- DINS: accretion powered
- TBFS
- DINS cousins
 - Isolated Black Holes
 - Intermediate Mass Black Holes (ULX)