

**This search correlates highly accurate X-ray observations with a deep optical sky survey. The small number of candidates found is in contradiction to the expectations.**

Searches for members of the exciting class of X-ray dim isolated neutron stars (XDINSs) so far suffered mainly from large X-ray positional uncertainties and there was no available deep optical survey. The ROSAT pointings or XMM observations and the ongoing Sloan Digital Sky Survey (Sloan DSS) promise a significant improvement for a new search.

## Selection Criteria:

### *Soft sources*

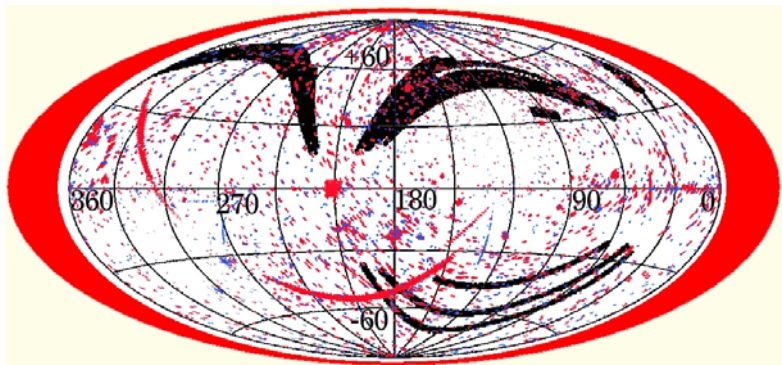
The hardness ratios should be similar to those of the known XDINSs. For the ROSAT High Resolution Imager pointings the hardness ratios have to be defined for the first time.

### *No or very unlikely optical objects within the X-ray positional uncertainty*

Sloan DSS (only northern sky) reaches  $r=23.5$  mag, USNO B1 goes down to  $R=21$  mag. Everything else than XDINSs or AGNs can be ruled out as possible counterparts by taking into account the X-ray to optical flux ratio.

### *No known catalogued source, especially no RADIO source*

XDINSs are radio-quiet. Using SIMBAD/NED ensures that there is e.g. no NVSS radio source.

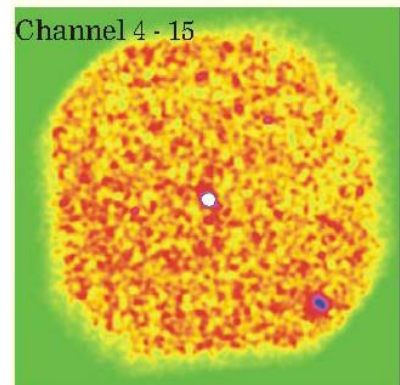
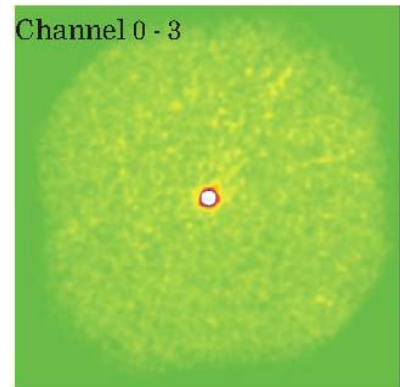


Sky coverage in galactical coordinates: The black area corresponds to the current Sloan data release 2. ROSAT PSPC (red dots) and HRI (blue dots) pointings are indicated.

## Preliminary Results:

A handful of XDINS candidates results from the ROSAT pointings together with the Sloan DSS and also with the USNO B1. No XDINSs were found using the first XMM catalogue. This is a significant deviation from the expectations.

A statistical analysis for the influence of the sky coverage of the ROSAT pointings and of the Sloan DSS is ongoing to clarify if there is a deviation for the XDINSs from the known pulsar distribution within our galaxy.



RXJ 1856.5-3754 – HRI observations  
A hardness ratio based on these two bands can be successfully used to find soft sources.