



# On the Extended Emission Around the Anomalous X-ray Pulsar 1E 1547.0-5408

S. A. Olausen, V. M. Kaspi, C.-Y. Ng, W. W. Zhu, R. Dib, F. P. Gavriil, P. M. Woods

(Submitted on 14 Jul 2011 (v1), last revised 14 Nov 2011 (this version, v2))

We present an analysis of the extended emission around the anomalous X-ray pulsar 1E 1547.0-5408 using four XMM-Newton observations taken with the source in varying states of outburst as well as in quiescence. We find that the extended emission flux is highly variable and strongly correlated with the flux of the magnetar. Based on this result, as well as on spectral and energetic considerations, we conclude that the extended emission is dominated by a dust-scattering halo and not a pulsar wind nebula (PWN), as has been previously argued. We obtain an upper limit on the 2-10 keV flux of a possible PWN of  $4.7e-14$  erg/s/cm<sup>2</sup>, three times less than the previously claimed value, implying an efficiency for conversion of spin-down energy into nebular luminosity of  $<9e-4$  (assuming a distance of 4 kpc). We do, however, find strong evidence for X-ray emission from the supernova remnant shell surrounding the pulsar, as previously reported.

Comments: 16 pages, 3 tables, 4 figures, published in the Astrophysical Journal

Subjects: **High Energy Astrophysical Phenomena (astro-ph.HE)**

Journal reference: ApJ, 742, 4 (2011)

DOI: [10.1088/0004-637X/742/1/4](https://doi.org/10.1088/0004-637X/742/1/4)

Cite as: [arXiv:1107.2952v2](https://arxiv.org/abs/1107.2952v2) [astro-ph.HE]

## Submission history

From: Scott Olausen [[view email](#)]

[v1] Thu, 14 Jul 2011 21:22:48 GMT (130kb)

[v2] Mon, 14 Nov 2011 20:35:06 GMT (130kb)

*Which authors of this paper are endorsers?*

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

## Current browse context:

astro-ph.HE

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

## Change to browse by:

[astro-ph](#)

## References & Citations

- [INSPIRE HEP](#)  
([refers to](#) | [cited by](#))
- [NASA ADS](#)

## Bookmark([what is this?](#))

