

## THERMAL RADIATION FROM A RADIO PULSAR: PSR1055-52

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**ABSTRACT.** The radiopulsar PSR1055-52 has been observed now by the Exosat observatory for about  $10^5$  sec, thus increasing the previously published data base (Brinkmann et al. 1985) by a factor of two. The pulsar was seen in the low energy telescope (0.04 - 2 keV) with the thin Lexan and Al/Par filters, but not in the Boron filter or with the ME experiment.

The data can be fitted with a black body spectrum. Requiring that the emission originates from a region of the size of a neutron star, i.e.  $R \sim 10^6$  cm, we obtain temperatures  $0.04 < kT < 0.09$  keV and a value for the interstellar absorption of  $0.5 < N_H < 2.5 \times 10^{20}$  cm<sup>-2</sup>. A power law fit, as proposed by Cheng and Helfand (1983) results in unacceptable high  $\chi^2$ -values, unless the power law index  $\alpha$  is rather high,  $\alpha > 3.5$ .

The inferred black body surface temperatures of  $5.8 \times 10^5 < T_s < 9.3 \times 10^5$  K are compatible with the initial cooling of this  $\sim 6 \times 10^5$  year old neutron star (Tsuruta 1985), with the reheating model of Alpar et al. (1984) - or with a combination of both.

If the interpretation as thermal radiation is correct, this would be the first case of a temperature determination of a neutron star surface by broad band X-ray filter spectroscopy.

## REFERENCES

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